HAZARDOUS WASTE CONTROL AND ENFORCEMENT ACT, H.R. 2867 (PART 2—INNOVATIVE TECHNOLOGIES)

HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY, ENVIRONMENT, AND SAFETY ISSUES AFFECTING SMALL BUSINESS

OF THE

COMMITTEE ON SMALL BUSINESS HOUSE OF REPRESENTATIVES

NINETY-EIGHTH CONGRESS

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HAZARDOUS WASTE CONTROL AND ENFORCEMENT ACT, H.R. 2867 (PART 2—INNOVATIVE TECHNOLOGIES)

THURSDAY, OCTOBER 27, 1983

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY, ENVIRONMENT,
AND SAFETY ISSUES AFFECTING SMALL BUSINESS,
COMMITTEE ON SMALL BUSINESS,
Washington, D.C.

The subcommittee met, pursuant to notice, at 9:30 a.m., in room 2359-A, Rayburn House Office Building, Hon. Ike Skelton (chairman of the subcommittee) presiding.

OPENING STATEMENT OF CHAIRMAN SKELTON

Mr. SKELTON. The subcommittee will come to order.

First let me thank all of you for attending our hearing today. We are here to discuss ways to encourage the development of safe alternative technologies for hazardous waste disposal, especially those ideas developed by small businessmen.

The Office of Technology Assessment estimates that we generate over 255 million tons of hazardous waste each year. That is over 1 ton for every man, woman, and child in this country. We know that land disposal of hazardous waste does not solve the problem. Land disposal merely relocates and delays the problem. Yet, we continue to deposit our mounting waste in landfills, deepwell injections, or surface impoundments. We need to redirect our efforts, perhaps with the help of Federal Government policy and incentives, toward finding appropriate, safe, long-term solutions.

At previous hearings on this issue we found an abundance of alternative technological ideas. Many of these innovative ideas are proposed by our small businessmen. I feel we must tap these resources of the small business sector and encourage the development of their ideas now.

Under current statutes and regulations, treatment of hazardous waste is constrained by complex, lengthy, and expensive procedures for obtaining a permit. Currently it may take years and thousands of dollars to acquire a permit. Many businesses, especially small businesses, cannot invest the capital, legal expertise, or time to acquire a permit.

For new innovative technologies other than those currently practiced, the EPA does not even have regulations. As a result, permits cannot be issued for new technologies. It is clear we are stifling in-

novative ideas and possible solutions to our hazardous waste problem.

The EPA has been very thorough in promulgating regulations for traditional methods of disposal. They have also been very helpful in drafting the research, development, and demonstration permit amendment I introduced to the Hazardous Waste Control and Enforcement Act, which incidentally was adopted. As we will discuss today, they are involved in the basic research to help create new technologies.

There are additional steps which need to be taken. It is time to focus our attention on developing a policy to encourage and promote the use of safe, cost-effective alternatives. I am hopeful that the testimony presented today will provide us with helpful insight and suggestions.

Mr. Hatcher, do you have comments?

Mr. HATCHER. No comments at this time.

Mr. SKELTON. Our ranking minority member Mr. Hiler, is at another meeting and, as I understand, will be here with us very, very shortly.

Our first witness today is M. R. Speach, who is the president of environmental services division, ENV, Inc., Long Beach, Calif. Please have a seat. Thank you for being with us. You may proceed.

TESTIMONY OF M. R. SPEACH, PRESIDENT, ENVIRONMENTAL SERVICES DIVISION, ENV., INC.

Mr. SPEACH. Mr. Chairman and committee members, this report will concern itself mainly with metal finishing industries, which I think all of us that have any knowledge of hazardous liquid wastes realize about 50 percent of these toxic wastes come from metal finishing operations. These wastes mainly contain metal salts, cyanides, and acids. The technology for treating these wastes has been with us for probably 40 or 50 years. There is no secret about treating toxic liquid wastes, at least in the metal finishing industries. Probably the biggest problem we have is in California, where I have 10 years of experience. We have about 1,000 generators of toxic liquid wastes, and that makes up about 50 or 55 percent of what is now going to landfills.

We all know that there is no safe landfill. That myth is over. Of course, the biggest mistake we probably made was not taking an alternate method maybe within 6 months after Love Canal.

However, we have about 1,000 of these companies. Probably close to 50 percent of them are companies that are under 25 employees. These are all minority type employees. This is the type of company, that plates bumpers or doorknobs and these kinds of things, and they range all the way up to the aerospace industries, where you have larger operations.

These people are strapped now, since they closed down the dumps run by the sanitation district 2 years ago in southern California. They were paying, at that time, about $6 a ton to get rid of their hazardous liquid wastes. It is now somewhere in the neighborhood of $25 to $45 a ton, and the lastest report, which was about 2 weeks ago from the State health department which says that they cannot discharge some of these liquid wastes after the first of the

year to landfills, and they estimate that these costs can go up to $50, $60 or $70 a ton.

The little guy can't afford it. That is why you are having illegal discharges. He is faced with finding other methods or playing that kind of a game. In the L.A. Times the morning I left, yesterday morning, there was an article where there was a task force being put together in the city of L.A. that is going to go out, looking for these illegal discharges.

I think that this approach, being a strong small business proponent, is wrong. So you find the illegal discharge and you fine him and you take him to court. After awhile you are going to put the little businessman out of business. Most of these small metal finishing operations employ 10 to 25 minority employees. These people cannot find another job. This approach will add to the unemployment problem. We must find a way to assist this businessman, not destroy him.

There are only two suitable answers, I think, to the hazardous liquid waste generated by the metal finishing industries. One is clean it up at the site. That is the optimum answer, at the generating point. If you generate 5,000 gallons a day or whatever amount, you make it dirty by taking clean water and performing your operation chemically, then you should treat it chemically at the site.

This costs money. A lot of the companies don't have the money, and some of them don't even have the space. The plant that you would have to install sometimes is as large as the plating operation itself. We have found that this is not the answer for probably 90 percent of metal finishing operations.

The money problem was being solved beautifully when the California Pollution Control Financing Authority was operating and they allowed these companies to apply for tax-exempt bonds. We made a couple of installations along these lines in the quarter of a million to a third of a million dollar systems. These companies would get 20-year low-interest loans, the last one we made was 2 years ago and it was an 8 percent loan for 20 years. These people were able to get their installation in, and there are no toxic liquid wastes going to the dump.

Again, this is probably only a 10-percent solution. I think, gentlemen, that we have to give them some help financially. I don't think it should be outright grants.

The second way to solve the problem is a mobile treatment system. You take a mobile treatment van to the site, treat onsite, and wind up with approximately less than 10 percent, in the form of a solid waste that can now go to a landfill without causing harm to the environment.

In every State but California, the type of solid that is retrieved from this type of treatment system is not considered a toxic waste. For some strange reason in California it is. In every other State, it could go out in your trash, as it is a solid waste at this point.

The important thing in both these recommended solutions is that the toxic liquid wastes are rendered relatively harmless at the generating site, and you take away less than 10 percent as a solid that can go to a landfill safely.

This approach keeps vacuum trucks off the highways. There have been all kinds of spill problems in California and I am sure

throughout this country. Again, I want to point out this should be cleaned up at the generating site; the technology is here.

Now we get to the permitting process. We designed our mobile treatment vans over a year ago. We built the prototype, and received permission to run two or three pilot tests, which were highly successful.

Mr. SKELTON. Excuse me. You wouldn't happen to have a picture with you, would you?

Mr. SPEACH. No, I am sorry, I don't.

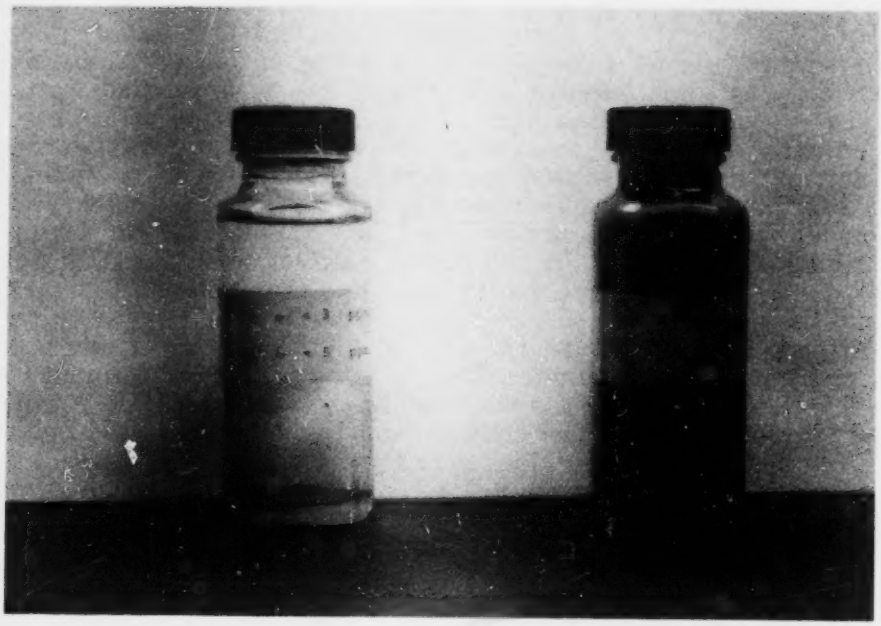
Mr. SKELTON. Would you supply one for the record?

Mr. SPEACH. I sure will. I will send it in.

[The photograph referred to above follows:]

Mr. SPEACH. We were allowed to run three tests, and then we started the permitting procedure. We went out to a bumper plating company and ran 5,000 gallons of toxic liquid waste through the van. In fact, I have sample bottles that show the dramatic difference as to what went into the van and what was discharged within minutes to the sewer adjacent to the plans.

[The photograph referred to above follows:]



OUTPUT INPUT

Mr. SPEACH. It took us 1 year to get a permit. First of all, the permitting documentation is not suited to mobility or chemical treatment. The documentation is keyed to landfill operations.

We had to fill out an EPA form that contains 60 pages. All the questions are landfill-oriented. We have a mobile van that has a chemical treatment system in it. Believe me, it was a farce filling out that form.

Following the permit application, we had various meetings with each regulatory group that felt they had cognizance. Finally, the State Health Department which must issue the permit, called a joint meeting. The permit has been approved thru public hearing and I was promised the document by November 1, 1983. I started the permit process in November of last year, and I will have it by November 1 of this year. The authorized 20 vans will take 6 to 8 months to complete. Therefore, at least 1,250,000 gallons of toxic liquid waste has been delivered to a landfill, that is thought to be leaking.

Again, I say these vans can go to the site, clean up the waste water and walk away with some solid waste that could be discharged safely.

I have got some specific suggestions that I feel should help the permitting process: The first being that EPA should come out and say that somewhere down the line we are phasing out all landfills as far as liquid toxic wastes are concerned. In fact, I think landfills should be phased out for almost everything because I think it is a stone age process.

The optimum solution, down the road—this is a little off the track here—I think you should treat anything you can, especially

the metal wastes because we have nickel and chromium, and you know chromium only comes from the Soviet Union and South Africa. We should look at the metal-recovering possibilities instead of just throwing it in the ground. We know of one naval installation close by that has over 500,000 gallons of chromated wastes; that is a recoverable material.

I feel that we should treat what we can chemically, and what we can't treat should be incinerated. It is that simple. You can incinerate anything, including liquid. I strongly feel that 20 or 30 years from now there should not be landfills. That is my own personal thinking. However, I think the EPA should set a goal, as California has done, that there will be no more toxic liquid wastes going to landfills.

Second, EPA must take the lead in getting these permits processed in an efficient manner. The State of California, through the health department has the responsibility to implement EPA rules and regulations. So, I feel that someone, whether it is the health department under EPA guidance or the EPA themselves should set up a permit processing group. Governor Brown set up such a special task force. We could go to that group with a permit problem, and they would bring together all the regulatory people in one meeting. The meeting I went to was held in the Governor's office in Los Angeles. All of the cognizant regulatory agencies were represented at the State, county and city levels.

That is what is needed in the permitting process. We can get permits out in 3 months if we get that kind of cooperation. That plan of action has to start somewhere. As far as I am concerned, the EPA should accept the primary responsibility.

Also, I want to go back to the point of cleaning up the forms. The forms should be tailored to the problem, which is a chemical treatment problem, not a landfill problem.

The third suggestion is to come up with a financial assistance program. As you know, the Office of Management and Budget has done away with our California Pollution Control Financing Authority (CPCFA). The State of California under Mr. Unruh has developed their own program, which is an excellent program for businesses faced with environmental problems.

The Office of Management and Budget should authorize the CPCFA and similar programs in other States. The program in California had about 60 loans let in 7 years, and I think every one of them is meeting their loan obligations. About 75 percent of these loans are backed by the Small Business Administration, and are probably the most successful small business program ever run by SBA.

Approximately 100 closed landfills were identified in the southern California area. Each contains varying amounts of toxic liquid wastes that are leaking into the ground.

As you know, Stringfellow is a big problem. EPA budgeted $10 million to cleanup Stringfellow 4 months ago. The first action taken by the State of California Health Department was the issuance of a $1.4 million study. This will be the third study on Stringfellow, and will result in a treatment concept after 14 months of study. From concept to an operating treatment system is at least an additional 18 months.

Every day they are taking 30,000 gallons of toxic liquid wastes to another dumpsite that is leaking per EPA reports. They are carting it 40 miles down the road, taking the risk of the thing being dumped on the highway if they have a spill, into another dumpsite where it will be a future crisis of a leaking landfill.

If that is solving a problem, gentlemen, we are in serious trouble. ESD came up with a proposal to go in there with an onsite treatment system similar to our mobile system, except it would be palletized. It could be installed within 90 days to handle all of the free water now being hauled away. Another phase of our proposal would neutralize the underground water threatening cleaning up and the area's drinking water. EPA representatives came to our offices, and we went through some bench testing to verify our treatment approach. They were satisfied and stated that it should be installed at Stringfellow and the West Covina landfill. Our cleanup proposal could be implemented at a lower cost than the dangerous hauling now going on.

I still don't have any response regarding the proposal. I don't know what it takes. In fact, at one point I said I would put it on for nothing until I prove it and then pay me. Gentlemen, to say I am frustrated is putting it mildly.

That just about sums it up. I could answer some questions, if you would like.

[Mr. Speach's prepared statement follows:]

PREPARED STATEMENT OF M. R. SPEACH, PRESIDENT, ENVIRONMENTAL SERVICES DIVISION, ENV., INC.

This report will be concerned with the metal finishing industries which generate up to 50 percent of hazardous liquid wastes being presently discharged to landfills. These wastes consist of mainly metal salts, cyanide, and acid. The technology for treating these hazardous wastes has been with us for at least 50 years; in chemical treatment and flotation for removal of the metals, oxidation of the cyanide and neutralization of the acid. The results of these processes is a sludge making up less than 10 percent of the volume treated.

The makeup of the companies generating these wastes vary in size from under ten man plating operations to large metal finishing operations. Ten years experience in the highly industrialized Southern California area show that of about 1,000 companies involved in the metal finishing operations, over 50 percent are small businesses with less than 25 employees. If we do not assist these companies by means of an economically feasible method to discharge their wastes, we will see an increase in the rate that they are presently going out of business. This situation becomes highly critical when we realize that the workers in these small businesses are mostly from minorities with limited education, and getting them new jobs will be very difficult. There are two ways to keep these small companies in business.

1. On-site treatment system; and
2. Mobile treatment service.

The on-site treatment system can be completely ruled out for the real small operations and most of the medium sized operations. The treatment system often takes up as much space as there plating operations and the economical impact would be disastrous. Our experience to date in Southern California indicates that about 10 percent of the medium sized operations have space and financial strength to install treatment systems. In almost all of the situations where systems were installed, the use of the California Pollution Control Financing Authority made it possible. The last complete system we designed and installed in 1980 (Al's Plating Company, Los Angeles, California) for $350,000 including the plant addition using 7.9 percent, 20-year tax free bonds. The CPCPA program has been inoperative since 1981 due to Office of Management and Budget action. California is now developing a state program with its banking community.

The Mobile Treatment Service is the most reasonable approach for economy and technical impact on these small businesses. Many of these small and medium sized

businesses, even with the space and finances, cannot technically operate on-site treatment systems due to the type of laborer employed.

The Mobile Treatment System replaces the vacuum truck which has been periodically pumping out the generated hazardous liquid wastes and hauling it to landfill. The results of this action over the past twenty years has left this country with the most serious internal crisis since it's founding. Road spills in transit and landfills leaking the hazardous waste into communities speaks for itself. The Mobile Treatment System will use technicians at the generator's site to treat the hazardous waste, discharge acceptable clean water to the sewering system and remove less than 10 percent as an acceptable solid waste that can safely be discharged to landfill. This committee should provide the impetus to get the Federal Government to take the following type of action:

1. EPA should announce and publicize a goal that all hazardous liquid wastes cannot be discharged to landfill. California has done it.

2. EPA must take the lead in the highly industrialized states to meet this goal.

Existing permitting format is keyed to dump sites, not the chemical treatment systems required to solve the problem.

Permitting process extremely lengthy partially due to the format and the usual sequential procedure. EPA or State should set up central permitting groups with authority to cut through Federal, State, and local regulations and accomplish 90-day permitting.

3. The Office of Management and Budget should support CPCFA programs throughout the Country. The six year record in California on these SBA backed loans was 100 percent in compliance by borrowers, which is more than can be said for other type SBA backed loans.

In conclusion, please consider another important fact. Many of the hundreds of leaking dumpsites that EPA and State agencies have authorized and are now facing horrendous clean up problems with an associated budget in the billions, can be cleaned up today using the same approach discussed in this presentation.

Mr. SKELTON. Mr. Speach, we do thank you so much for traveling and being with us. As I recall, you submitted testimony at our West Covina, Calif., hearing.

Mr. SPEACH. I didn't. I handed in a paper. I wasn't allowed to speak.

Mr. SKELTON. Yes, I understand. We were not able to hear you that day, but we do appreciate your being with us.

Mr. SPEACH. I appreciate you giving me a chance to talk.

Mr. SKELTON. Mr. Hiler?

Mr. HILER. Thank you, Mr. Chairman.

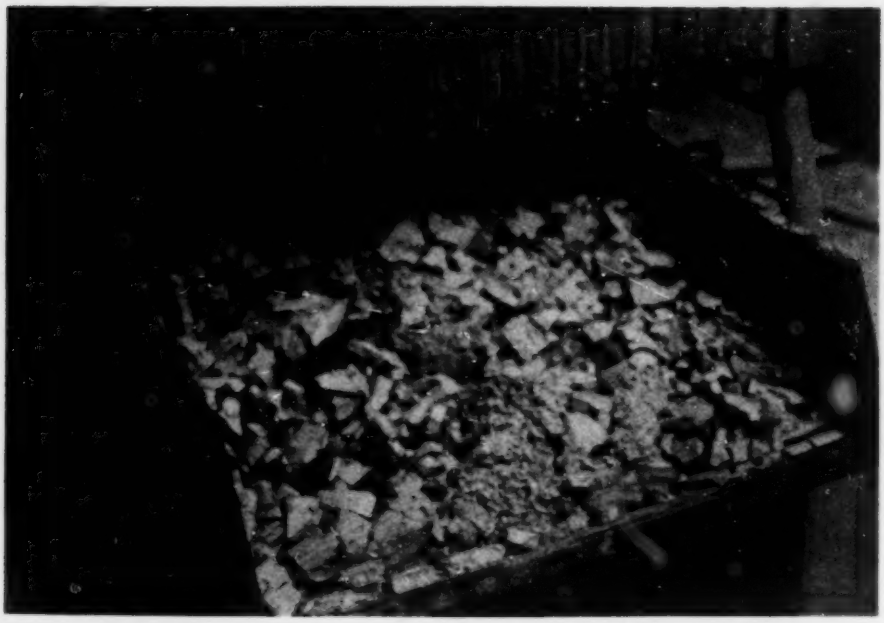
I have probably one question: What does this technology of yours cost?

Mr. SPEACH. The cost? Of course, it varies with the size of the plant. We put one in a place called Al's Plating and he was doing about 40 gallons a minute. His plant cost about $150,000. It is completely automatic because of the nontechnical workers in his operation. It has been working 18 months like clockwork. It is a beautiful operation and I have pictures of the solid waste generated which can safely be deposited in a landfill.

Mr. HILER. You can submit them for the record.

Mr. SPEACH. Yes, it is a solid, almost like a brick, if you will. There is a little moisture in it, but it has a solid conformation. You can hold it in your hand.

[A photo of the waste material described above follows:]



Mr. HILER. How about your mobile unit?

Mr. SPEACH. The mobile van is designed to handle the toxic liquid wastes generated by metal finishing operations. A month or 2 of operation will fill a clarifier with sludge. This toxic sludge is usually hauled away by a vacuum truck. This is the normal operation. The costs now are running about $1,000 every time they have 3,000 or 4,000 gallons loaded and taken to the dumpsite. We can very easily match that $1,000 cost, or maybe lower it a little bit.

The other thing that I want to bring up which is kind of interesting is, when a metal finisher generates a toxic waste he is responsible for that waste forever. Those who legally discharged to Stringfellow 20 years ago are now being sued to clean it up. That landfill was approved and permitted by the Health Department. The generator would have been better off if he put it illegally in the sewer.

Our van, will generate about 95 percent of sewerable water; the other 5 percent will be changed to a solid; which is our responsibility. He is off the hook completely, and there are no toxic liquid wastes on the highway.

Mr. HILER. Just a final question, Mr. Chairman. What is keeping your process from being implemented?

Mr. SPEACH. I have finally gotten my permit. Now I am moving into new facilities. I hope to have at least 10 vans on the road within the next 6 months. We are a small business and have been operating 11 years. We are permitted for 20 vans and it would take about 100 vans to handle the total liquid wastes now generated annually by metal finishing operations, which go to landfill to become a serious environmental problem later.

The whole year that we have been waiting, and every day that we didn't operate 1 to 10 vans, about 5,000 gallons per van per day was going to a landfill, namely, the West Covina site.

Mr. HILER. Thank you very much.

Mr. SPEACH. You are quite welcome.

Mr. SKELTON. Mr. Hatcher?

Mr. HATCHER. No questions, Mr. Chairman.

Mr. SKELTON. Mr. Speach, I had several questions and you answered all of them. I have one question, however.

I assume you consider the so-called pollution control bond system very vital?

Mr. SPEACH. You think it will be revitalized?

Mr. SKELTON. The question is, do you consider it vital?

Mr. SPEACH. I do. We would use it, but there are a lot of companies that needed this financial assistance. It is a fantastic deal to get 8 to 11 percent money for 20 years. They got their own plant and everybody is happy with no toxic liquid waste leaving the site.

I think that is important. Mr. Unruh has a program called CLEAN which he hopes to have implemented, but it is not as good as a CPCFA, which was backed by the Small Business Administration. That is a much better program. If we could ever get that program back, it would be fantastic.

Mr. SKELTON. I do appreciate and the committee appreciates your taking the time to be with us and sharing your thoughts. We are tracking along the same lines, so I do appreciate it so much.

Mr. SPEACH. Thank you very much.

Mr. SKELTON. The next two witnesses I will ask to sit together: Walter Carolan, who is the president of Rose Chemicals in Kansas City, Mo., my home State, and a gentleman from my home county, Dwight Thomas, also from Rose Chemicals.

Gentlemen, would you please take the stand. Welcome, and thank you for coming.

Please proceed, Mr. Carolan.

TESTIMONY OF WALTER C. CAROLAN, PRESIDENT, PCB DIVISION, M. C. ROSE CHEMICAL COMPANY, INC., ACCOMPANIED BY DWIGHT E. THOMAS, JR., RESEARCH AND DEVELOPMENT

Mr. CAROLAN. Thank you very much, Mr. Chairman.

First, as a way of introduction, our area of business expertise is in the handling of PCB-contaminated materials. Our company has been in business for approximately 2 years, and we have received approvals from the EPA for detoxifying PCB liquids, hydrocarbons, insulating oils, if you will. We have a capacitor treatment approval, and we have an experimental approval on disassembly of transformers.

It has been our experience in conjunction with this business that all of the hazardous waste businesses are somewhat interrelated. We have effluents from our process that need to be treated by incinerators and by landfills. So, in a sense, I don't entirely agree with the preceding witness that landfills will entirely disappear.

Mr. SKELTON. Let me interrupt you, if I may, Mr. Carolan. The bells we just heard call for a vote on the journal on the House floor. I will stay. The other members of the committee will go, and

they will return after voting. Let me announce to the audience and to the witnesses, from time to time during our hearing, there will be various votes. I will probably have to interrupt and make the other votes but this one, being a journal vote, I will miss because our business here is more important.

Go right ahead, sir.

Mr. CAROLAN. As I was saying, no man, no business is an island, and all processes have effluents that have to be handled by other hazardous waste businesses. This would even include incinerators whose effluents have to be under current regulation hazardous waste landfill and even their gas effluent scrubbing equipment has material that must be landfilled. In any event, we are entrenched in the PCB resource recovery business.

Mr. SKELTON. For the record, please state what PCB is. I know what it is, but I would like for you to tell us on the record.

Mr. CAROLAN. That is the acronym for polychlorinated biphenyls, which is a material that has been used in insulating oils in the electrical utilities since, I believe, 1927. It was used for a period of years, I believe, until 1977, when it became very highly regulated.

There are millions and millions of gallons of transformer oils that are contaminated by today's standards with these PCB's or polychlorinated biphenyls. Our resource recovery really involves detoxifying these materials. We are able to reclaim these mineral oils and either upgrade them to insulating oil quality again, or to sell them as fuels.

In the case of capacitors which are again an electrical utility device, we are able to with our particular process decontaminate components and effect a resource recovery. Our process is, in a sense, a partial process that we have materials which need to be further processed, either by incinerator or ultimately by the landfill, that is the effluents from incinerators are landfilled.

My point is that I think all waste treatment technologies are valid, they need to be well run, but they are valid.

Insofar as additional technology available, our company in the period of time that we have operated has developed on an experimental basis five additional methods of detoxifying PCB-contaminated materials, many of which we think are better processes than the one that we have permitted, and we do have a permit.

In the case of a specialized material called gas condensate—and this is one that we can make an example of and the difficulty in getting permitting—the gas condensate is what they would have called in the old days casing head gasoline. In the expansion of the gas that is transmitted in a natural gas pipeline, a liquid is produced.

It used to be called wellhead gas or casing head gas. The gas pipeline utilities have this material. They get it over the winter months, and it is PCB-contaminated by virtue of the fact that throughout the years they used PCB-contaminated lube oils in the gas compressor transmission systems.

We started in December 1982 talking with the EPA about a gas condensate treatment permit the technology is really very straightforward. It is a simple distillation process, really a known quantity. We rewrote in March, I believe it is, a written request to the EPA, and we received no response.

We again contacted them by letter in May, asking them if they wouldn't respond to our request for a permit, pretty much saying that we weren't really looking for a disapproval, that we would like an approval, but we would like them to say something. We were written back to the effect—and really a very telling letter, I think—that they are very busy. PCB's are a concern to the EPA and there is no doubt about that.

Mr. SKELTON. Do you have a copy of that letter?

Mr. CAROLAN. I probably can rustle one up.

Mr. SKELTON. We would like to have that for the record, if possible.

Mr. CAROLAN. Yes, I will.

[The information referred to above follows:]

U.S. ENVIRONMENTAL PROTECTION AGENCY,
Kansas City, Mo.

CHRISTOPHER B. GOSCH,
Director of Sales and Marketing, Rose Chemicals, PCB Division, Kansas City, Mo.

DEAR MR. GOSCH: Thank you for your July 25, 1983, letter. We, too, are concerned about the availability of disposal options for polychlorinated biphenyls (PCBs) and PCB items. In the past two and one-half years, Region VII has approved about twenty PCB disposal options. Tremendous strides have been made during this period in providing more technically sound disposal methods. We appreciate your company's contribution to this effort by developing PCB disposal technology. Two approvals for PCB disposal facilities have been granted to your company by EPA, Region VII.

The PCB problem is only a small portion of the environmental concerns that exist today, and we have limited resources to deal with these problems. We will, however, make every effort to expedite the review of your most recent disposal request.

Thank you for your expressed concern.

Sincerely yours.

MORRIS KAY, *Regional Administrator.*

Mr. CAROLAN. The gist of it is that there are technical review people at the EPA, but just not enough of them. I think that this fact along with your legislation, is a point that needs to be made, that if the EPA is not properly funded in a technical sense—and in, I believe, your legislation a technical review of these permits is suggested and required—if the EPA technical people are not properly funded and they have the people to review these permits, it really could end up being the same net result—long delays.

Having talked with our local EPA people, I am not criticizing them in the sense that there are only 24 hours in a day and they have a great number of requests before them and they have limited funding for technical review people. Certainly in our region they do. This, I believe, can be quite a stumbling block and something that needs to be attended to.

In any event, we finally received a written reply from the technical man at the EPA asking for more information in early October. This really boils down to the fact that we were horsing around trying to get a permit for a relatively simple process, at least from our point of view. We view it that way however. Perhaps they don't. It took 10 months, and basically the letter finally said we need more information.

Mr. SKELTON. After 10 months they told you that?

Mr. CAROLAN. Yes, midway along that 10-month period we requested some sort of an answer. The answer was that they were overloaded with work and I believe that. The point I am trying to

make, is along with your legislation, if the EPA is not properly funded then there has to be a balance between their enforcement people and their technical people because in your legislation you still require some sort of an overview, and properly so, by the EPA. They have got to have the manpower to do it. It is not a matter of criticism for the EPA, it is just sort of the way it is. That would be a stopper to all the good works that you are trying to do.

Along these lines, we have recently submitted to the EPA a request for further treatment of capacitor material that is the core material of capacitors. That would, to a great extent, negate the necessity for incineration, possibly. We still would have an effluent from our process. We feel that under the current rules logically—and I underline the word logically—this material could be hazardous waste landfilled or alternatively it could be incinerated.

One of our current difficulties is we are on a time line in that there is a so-called 1-year rule that material taken in prior to this year must be disposed of by the end of this year. Perhaps more serious than that is the so-called 90-day rule that gives us essentially 90 days, after the turn of this year, to perform any work that we are going to do in our disposal, or in our resource recovery technique.

Mr. ORBAN. If I may, can I ask a question on that?

Could you expand on the 90-day rule to tell us in your opinion how it was developed and what purpose it serves and if that causes your innovative treatment process any problems?

Mr. CAROLAN. I think you have to start out with the 1-year disposal rule. I think it was made with good intentions. Mr. Thomas can interject here because this is a complicated rule to me. All materials that are taken out of service by a utility, they have I believe up to 1 year, as the regulations state it, to get it out of their system, to dispose of it. At that point, we have 90 days to make it disappear, that is any disposal organization. There is a little bit of ambiguity to that, I think. Perhaps you can elaborate on that.

Mr. THOMAS. Well, the problem is that a lot of those materials were taken out of service by utilities and stored. Obviously they are not going to take out one capacitor and ship it someplace for disposal as one item. So, it has been stored for a period of time. As a big enough volume is accumulated, then they are shipped to a disposal facility.

Now, the dating o this is actually the date that the unit was taken out of service. That is when the clock starts to run. From there, there is a year limit. At the end of a year this material has to be completely disposed from start to finish.

Mr. ORBAN. Or what?

Mr. THOMAS. Or the generator then becomes subject to a fine. That 1 year also includes the actual time of disposal, unless the generator ships it to the disposal facility after 9 months, which in such case the generator becomes liable for a fine and also the disposal facility then has an extension time of up to 90 days for the ultimate disposal. But the problem we run into is a great deal of this material has laid around in a warehouse someplace for 9 months and then here it comes and we have only got 90 days to dispose of it. Then we are liable for a fine. So, particularly in resource recovery, that puts you in a difficult situation.

Mr. ORBAN. Can you take care of the material you receive in the 90 days?

Mr. CAROLAN. Well, to be honest, sometimes you can and sometimes you can't. I think this 90-day treatment number came from input from the two incinerators that are in business at this time who made such a statement, I believe to the EPA—I have read it in some of the clarification things that came out—that they stated that they could incinerate everything that they had in a 90-day time period.

Actually, my recent experiences would challenge that. I really doubt that. I think the incinerators are loaded right now. They have shown us an unwillingness to treat our own wastes in a timely fashion.

Mr. ORBAN. So these incinerators, which are the only two places where you can dispose of PCB's under current permitting regulations, in your experience are at capacity or close to it?

Mr. CAROLAN. Our indications are they are at capacity. There is a third incinerator that has just been permitted. However, they are mechanically not quite ready, in my opinion, to treat PCB material, capacitor core material. It is one thing to be permitted and it is something else to be mechanically geared up to do it.

We have been in contact with the two other incinerators who have been in business for some time. The one has told us they would write us a letter saying that they couldn't deal with us or even give us a price on treating material until after February. I believe this is the date that they suggested. Their letter is in their legal department right now being carefully couched and phrased, I am sure.

There is another company which has I think through a great deal of probing given us a quotation on treating material by the end of this year. However, their price structure is four to five times what the current market value is on a day-to-day basis. I have challenged that these companies would prefer that we went out of business.

Mr. ORBAN. So, it is your experience that these businesses, being the only two that are licensed for their incineration by EPA, have perhaps raised their price a little bit above what the market will bear?

Mr. CAROLAN. Oh, certainly. That is one of the very big problems that the utilities and ultimately everybody faces, is that the enforcement of these rules, everybody understands that and it has been prioritized, it is a priority, but the technology that is legal is hard to come by. The Government has, I think, inadvertently set up an oligopoly in this area.

I would suggest that some slowdown in these rules be effected until other companies can come on stream and reduce the monopolistic pressures in this area.

Mr. SKELTON. Let me ask you a question. Would you please, Mr. Carolan, comment on the AccuRex PCB destruction process and how your process differs?

Mr. CAROLAN. I don't know that it is really appropriate that I would comment on someone else's process.

Mr. SKELTON. We just want to know the difference.

Mr. CAROLAN. I can tell you the similarities. Maybe that is an easier thing to do there.

They are both chemical detoxification processes of insulating oils. Companies are very big on proprietary information and I do not believe that AccuRex, which I understand is a fine company, at least publicly divulges just what their process is. We are less secretive than that. Ours is an offshoot of the so-called Goodyear process. It involves our approval and involves sodium chemistry.

If you wish to make a case for small business being innovative, I think you can take a look at Goodyear—to large company—and their rather innovative process. They spent a great deal of money developing this process. They turned it into the public domain for the simple reason that they didn't want to be involved with the liability aspects of hazardous waste treatment.

We have talked with Goodyear directly. They were very interested in our company, but they had no interest in a direct participation because of the liability aspects. I don't think that you are going to find large public companies very eager to be involved to this. I think to a great extent the world is going to depend on smaller companies to do this sort of thing.

Mr. SKELTON. In other words, this is a small business domain?

Mr. CAROLAN. This is a small business domain. The large corporations to a great extent can suffer terrible consequences from liability suits and the like.

Mr. SKELTON. Mr. Hiler?

Mr. HILER. Thank you, Mr. Chairman.

I missed quite a bit of the testimony during the vote, but if I might just ask one question.

What is the major impediment to your type of business from taking off?

Mr. CAROLAN. From taking off? A slowness in being able to get permitting, for one thing. The second thing, I think that the incinerators specificially, and perhaps even the landfill companies, if they are not writing the regulations, they certainly have a great deal of input into the so-called clarification of the regulations.

I think if you are devoted to resource recovery, you have to have the regulations interpreted, certainly, and perhaps even written, by people whose interests are not opposed by resource recovery. In a sense, landfilling and incinerators complement each other and there is no resource recovery there.

Mr. SKELTON. Let me interrupt at this point. Are you intimating that big business is getting in the way of small business doing a job?

Mr. CAROLAN. I think so. That perhaps at this juncture is an editorial comment, but it would appear so. There have been some TOSCA clarifications. They would appear to us that they were written slanted toward incinerators. It is not in the incinerators' business interest or, for that matter, landfills' business interests, for resource recovery. It is that simple.

Mr. SKELTON. Any further questions, sir?

Mr. HILER. No; I yield back.

Mr. SKELTON. I want to thank you so very much, Mr. Carolan and Mr. Thomas. We appreciate your being with us. It is nice to see you again, Mr. Thomas.

Mr. CAROLAN. Thank you.

Mr. THOMAS. Thank you.

Mr. SKELTON. The next two we will ask to come as a panel, Mr. Ken Kazarian, who is the vice president of the BKK Corp. from Torrance, Calif., and Richard Fortuna, executive director, Hazardous Waste Treatment Council, Washington, D.C.

Let the record show, unless there is objection, that each of the proposed written testimonies will appear and that we ask you to summarize your testimony because, quite honestly, we have many, many witnesses we must get through. Your full testimony will appear in the record, but if you will summarize it, it will be much more helpful to us. Without objection, that will be the case.

TESTIMONY OF KEN K. KAZARIAN, VICE PRESIDENT, BKK CORP.

Mr. KAZARIAN. Thank you, Mr. Chairman. I will try to summarize as quickly as possible and then perhaps answer any questions which you may have.

BKK Corp. has been in the hazardous waste management business and the total waste management business for over 50 years. We are happy to comment to this committee this morning on the issue of hazardous waste treatment.

Mr. SKELTON. I might interrupt you, Mr. Kazarian. For Mr. Hiler's and the other members' edification, we were visiting and held a hearing at one of your operations in West Covina, Calif. where you were kind enough to testify. We do appreciate your making this trip up here.

Mr. KAZARIAN. Thank you, sir. It is our pleasure to continue to comment on this subject. I think it is one which has been misunderstood in many areas, and with more hearings like this I think people will get a clearer idea of where we are hopefully going to be going in the future.

To very quickly summarize BKK's operations, we do operate a hazardous waste landfill in West Covina, Calif. We are also operating the first major treatment facility to be permitted in the State of California in San Diego County, but there are many things that are going to have to change in the future before we see more facilities such as this coming on line across the country.

There has been a ban on specific materials for landfilling in the State of California and legislation similar to that is being considered here on the Federal level. But all of these are dependent on one thing; that is, we need to have a set of regulations that leaves out cheap alternatives. That is going to be the largest obstacle for treatment to get over.

The simple fact of life is the level of technology that the waste management business is going to operate at is whatever level is dictated by law. We see rising costs in treatment. Many of those costs in the future are going to be dependent on how many materials are basically regulated into treatment.

We see the more materials that will go through a facility, we will be able to hold costs down. If we regulate a relatively small number of materials toward treatment, the costs are going to be much higher. Because the number of users will be so much small-

er, the cost of those facilities will be a burden on a relatively small number of people.

The bottom line is that as costs go up without having equal enforcement, equal regulatory participation or regulatory oversight, in the whole industry, as the costs go up, it has been proven that actually illegal dumping will increase.

One thing that has happened in the State of California, when the $18 per ton California waste fee was imposed on restricted wastes in the State of California this last July, about 2,000 tons of restricted wastes which had been coming in the landfill prior to that magically disappeared.

Mr. SKELTON. Where is it going?

Mr. KAZARIAN. There are a lot of theories. It is not coming to the landfills. Every time we have seen either costs increases or we have seen a site closure we have seen a loss of the volume of material or a lower number of material going into land disposal facilities.

When there were three operating class I sites in southern California and the first one closed down, leaving only two, when the increase was inspected and looked at for the other sites, about 10 percent disappeared at that point in time. I think over history we will see every time there has been a closure or rise in cost, the volume going into disposal facilities have magically lowered.

Mr. SKELTON. That is interesting, to say the least.

Mr. KAZARIAN. Well, it is. As a waste management company and servicing industry, obviously we would like to know where they are going, also. As we go along, though, and we start moving toward treatment, it was said earlier by one of the witnesses in his experiences trying to deal with treatment and fill out forms, we have a set of rules and regulations in this country that were designed around landfilling.

We are trying to modify those and move them into high tech alternatives. Once we get certain hurdles out of the way, the treatment industry runs into others. So, I think we are going to have to look a lot closer at the specific problems of treatment once we get there.

I think at this point that really summarizes everything I wanted to say. I will open it up to questions.

Mr. SKELTON. We will withhold questions until after Mr. Fortuna makes his comments.

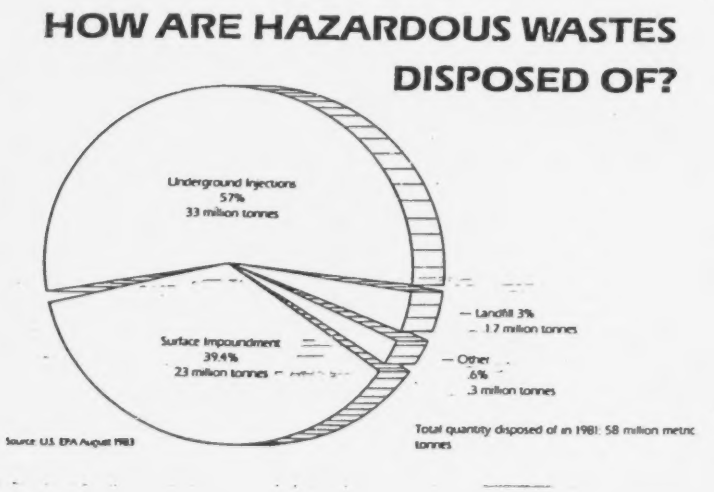
[Mr. Kazarian's prepared statement follows:]

Prepared Statement of Ken K. Kazarian, Vice President, BKK Corp.

My name is Ken Kazarian, Vice-President of BKK Corporation in California.

We appreciate this opportunity to express our views, based upon fifty years of experience in waste management, on the need to provide effective alternative technology to safely and economically manage the industrial waste streams of small business waste generators.

The committee is aware that latest U.S. EPA estimates, released last August, indicate that 1.7 million metric tons of hazardous wastes were landfilled in the United States in 1981 and that 95% of all hazardous waste were managed upon the large generator's own plant site.



In Southern California the best current estimate is that industry generates some 2.4 million tons of hazardous wastes annually. The vast majority of these wastes are produced and managed in the Los Angeles metropolitan area, but sizeable volumes also are generated in the counties of Orange and San Diego. The other four counties combined generate less than 4% of the region's total. About

1.9 million tons (79%) of the amount produced annually are managed on the premises of the generating industries, and almost two-thirds of these on-site wastes can be found in Los Angeles, Orange, and San Diego. More than 500,000 tons/year are sent to off-site land disposal sites in Los Angeles, Kern and Kings Counties.

The small business waste generator in most cases is totally dependent upon off-site waste management facilities. In Southern California, disposal service is available to both small and large generators at the following per-ton disposal charges plus local state and Federal taxes which are itemized separately:

	Disposal Charge	Taxes/Fees	
Restricted Hazardous Wastes (not yet banned from Land disposal)	$22.75	City, West Covina	$ 2.25
		State	18.00
		**Federal, IRS	2.13
		Total	$22.38
Extremely Hazardous Wastes	$31.85	City, West Covina	$ 3.15
		State	6.40
		**Federal, IRS	2.13
		Total	$11.68
Hazardous Wastes	$22.75	City, West Covina	$ 2.25
		State	6.40
		**Federal, IRS	2.13
		Total	$10.78
Extremely Hazardous Waste (which could contain a listed restricted hazardous waste)	$31.85	City, West Covina	$ 3.15
		State	18.00
		**Federal, IRS	2.13
		Total	$23.28

	Disposal Charge	Taxes/Fees	
Non-Hazardous (liquid)	$22.75	City, West Covina	$ 2.25
		County, L.A.	.035
		Total	$ 2.285
Refuse (general)	$ 3.40	City, West Covina	$ .35
		County, L.A.	.035
		Total	$ .385

Authorities for Taxes

** Federal Internal Revenue Service Tax of $2.13 per dry weight ton on Hazardous Waste at a qualified Hazardous Waste Disposal Facility to conform with the Hazardous Substance Response Revenue Act of 1980, Hazardous Wastes are defined in 40 CFR Part 261. Effective October 1, 1983.

- City, West Covina - 10% gross revenue to the City of West Covina, California on all wastes disposed. This generated $1,530,6[illegible].59 for the City in 1982.

- State - Chapter 323 Statutes 1983 increases the fee imposed on all on-site and off-site disposal of hazardous waste to $6.40 per ton (2,500 ton cap) and $18.00 per ton (no cap) on restricted hazardous waste as defined in Section 66900, Title 22, CAC.

- County, Los Angeles - Ordinance 83-0160 (Amending Title 20, Los Angeles County Code) establishes a fee of $.035 on all liquid and solid non-hazardous waste, effective October 1, 1983.

Generator Assessed Substance Tax (Superfund)

Generators of hazardous and extremely hazardous waste are assessed by the Board of Equalization. Once a year a Hazardous Substance Tax, (State Superfund) is assessed on total "wet weight" tons disposed. Rates charged generators under statutes, 1981, Chapter 756 are as follows:

	1981 Per Ton	1982 Per Ton
Category A, Surface Impoundments	$ .978755	$ 1.39606
Category B, (Land Disposal, Hazardous)	$ 6.525034	$ 9.290704
Category C, (Land Disposal, Extremely Hazardous)	$13.050069	$18.581408
Category D, Mining Operations (Hazardous and Extremely Hazardous Waste)	$ .065250	$ .092907

Rates are adjusted annually to maintain the State Superfund at a $10 million level.

The committee should be interested to note that following the imposition of the $18.00 per ton California State tax on July 1, 1983, two thousand tons per month of "restricted" hazardous waste mysteriously vanished from sight -- at least they no longer come to our Los Angeles County facility.

Thus, we know that safe disposal alternatives must be affordable if we expect small generators to utilize them.

One of the best barometers of the effectiveness of a community's enforcement program is the level of heavy metals found in its sewerage sludges. Even before imposition of the $18.00 per ton tax, the extremely high level of heavy metals in Southern California's San Fernando Valley sewerage sludges, discovered by the "Southern California Waste Management Project"*** indicates that some small generators, unless forced, will never be willing to configure the cost of legal, safe disposal in the price of their product or service and are illegally using community sewers for disposal.

In fairness, however, it must be stressed that the great majority of small businessmen comply with all Federal and State regulations in their waste management practices.

BKK has made a serious business committment to the community to provide leading-edge technology for pre-treatment of regional industrial waste streams to render them environmentally acceptable by reducing their volume and stabilizing residues.

At a cost of $3.7 million to our firm and at no cost to the taxpayer we have provided such a facility in the County of San Diego, California as described in the attached exhibits.

The firm is in the process of siting a similar facility in the heavy industrial zone of the Long Beach/Los Angeles harbor area.

This facility should be "on line" within fourteen to eighteen months.

The committee must understand that treatment, even including the beneficial impact of volume reduction on the transport element, can represent a bare operating cost increase of six to seven times that currently charged at land disposal sites.

Thus, if Federal and State legislators truly want to see meaningful alternative technology developed and placed on line, they must not leave cheaper and less environmentally acceptable alternatives in place.

Legal and safe disposal of hazardous waste should be part of the cost of doing business applied equally to all industries generating hazardous wastes.

Unfortunately, if regulations prohibiting illegal disposal are not equally enforced, the "moonlight dumper" and the "secret sewerer" gain an unfair advantage over their law-abiding competitors.

BKK, in closing, commends this committee for its interest in finding solutions to some of the complexing problems which have hindered development of alternative technologies for safer management of hazardous wastes.

*Testimony delivered to the Subcommittee on Energy, Environment, and Safety Issues affecting Small Business of the House Committee on Small Business on Thursday, October 27, 1983, at the Rayburn House Office Building, Washington, D.C.

***Funded by California DOHS, Southern California Association of Governments and private industry.

TESTIMONY OF RICHARD C. FORTUNA, EXECUTIVE DIRECTOR, HAZARDOUS WASTE TREATMENT COUNCIL

Mr. FORTUNA. I would like to make a few comments about the Council itself, as to who we are and who we represent. We are a national association of firms who believe in the primary use of treatment technologies as the methods for handling hazardous waste and in the restricted use of land disposal facilities; that is for those wastes that have been pretreated, stabilized, and for the residues of treatment processes. We believe land disposal does have a role in the hierarchy of waste management, but it is at the end of the hierarchy rather than as the method of first resort for all types of waste.

I think it is fitting that these hearings are being held this month because this marks the seventh anniversary of the original enactment of the Resource Conservation Recovery Act, the Nation's basic authority governing the management and disposition of hazardous wastes.

While the 1976 act and its 1980 amendments both spoke to the desirability of the increased use of treatment and decreasing reliance on land disposal, the more things change the more they stay the same.

The vast majority of all hazardous wastes continue to be land disposed rather than treated or pretreated prior to disposal. This includes, as you know, Mr. Chairman, surface impoundments as well as underground injection. Moreover, the vast majority of our present Superfund sites are land disposal facilities. Unless reliance on land disposal is changed by explicitly restricting the types of waste that can be land disposed, we will continue to witness a proliferation rather than a reduction in the number of Superfund sites.

The specific reasons for low cost, unprotected-land disposal are numerous: Little capital is required up front; there are no inherent limitations on what can be placed into a land disposal facility; many preventive measures, such as dual liners and ground water monitoring are either not required are avoided due to weak regulations and grandfathering; ultimate liability for the facility after closure may be shifted to governmental entities; and protection of public health is predicated solely upon physical barriers that cannot contain many of the wastes that are so disposed.

Just as the regulations and the inherent nature of the practice places no restriction on land disposal, a treatment facility invests the majority of its capital before a single load of waste is ever received, must operate or strives to operate under stringent standards governing process efficiency and duration, and are specific to given waste streams. Unlike land disposal, there is no current treatment method that can process all types of wastes. Most importantly, it will always cost more to permanently render a waste nonhazardous at the time of generation under controlled conditions than it will to simply bury or inject and hope.

The desire for increased certainty and permanency in the protection of public health and the environment cannot be separated from the inevitability of increased costs for proper and protective hazardous waste treatment.

While treatment provides greater certainty that wastes will be prevented from causing future threats to public health and the environment, certainty is a two-way street. The regulations and policies governing hazardous waste management must insure that there will be a market for something other than unrestricted land disposal.

Until all forms of hazardous waste management are required to play by the same rules with the common denominator being equal protection of public health and the environment and not simply the lowest cost, and without an explicit policy and legislative directive that prohibits the land disposal of certain hazardous wastes, the much hoped for transition to treatment is little more than a pipe dream.

As a recent article in the Wall Street Journal recently observed: "There is a lot of risk involved in designing and siting a waste treatment plant." Why should a company take a technological risk along with other risks? One might also query as to why a society that prides itself on high tech innovations has a no tech approach to hazardous waste management?

In addition to the aforeidentified weakness in the land disposal regulations and the inherent differences between treatment and disposal, there are numerous other serious loopholes in the current regulatory coverage of hazardous waste generators, facilities and wastes themselves that similarly allow wastes to be disposed in an unprotective manner and without proper treatment.

These loopholes have been the focus of several studies, most notably the Office of Technology Assessment. I will not go through them all today. Suffice to summarize at this point that more generators and individual waste streams are exempt than are subject to present regulatory coverage. The hole is literally bigger than the doughnut.

In addition, many hazardous waste facilities themselves are exempt from RCRA coverage. This is particularly true for facilities such as industrial boilers, furnaces, and kilns, which can burn hazardous wastes for the purpose of energy recovery without regard to destruction efficiency or emissions limitations because the energy recovery of these facilities is currently deemed to be a beneficial recycling activity.

It simply makes no sense from either a public health or market equity standpoint to subject incinerators to stringent levels of destruction efficiency while exempting every other facility that puts a flame to waste on the basis that their primary purpose is to recover energy.

The transition to treatment cannot and will not be built upon the ethereal incentives or encouragement of previous legislation and the direct disincentives and disparity of current regulations.

Clearly, the incentives of previous efforts are little more than monuments to our lack of understanding and judgment about the necessary policies that would truly stimulate investment in and use of treatment.

I must personally confess to having been a party to the 1980 amendments. All I can say is it did seem like a good idea at the time, but certainly it has not done the job in terms of bringing about increased use of treatment.

We have heard some discussion here about illegal disposal, and the use of sewer systems and the like. It has been the consensus of opinion of our membership that while illegal disposal and the failure to enforce existing regulations allow the continuation of certain improper practices, the current legal loopholes alone are a far greater threat to the public health and to the continued operation of these facilities than lax enforcement and illegal disposal combined.

The perversity of current policies governing treatment and disposal is punctuated by the findings of a recent National Academy of Sciences report, which found that methods now exist to treat every waste that is being generated. Moreover, this country is not starting from scratch in terms of available commercial capacity to initiate the transition. In fact, the vast majority of the treatment firms that the Council has surveyed reported unused existing capacity in 1982 between 30 and 50 percent.

The Council is currently compiling data on available and projected treatment capacity for those wastes that are scheduled for statutory land disposal prohibitions and will be releasing this information in the near future.

I would like to move on to some of the specific problems faced by new technologies and trying to bring these methods on line.

Mr. SKELTON. Mr. Fortuna, we do have a number of other other witnesses. Can you summarize as best you can, sir?

Mr. FORTUNA. Certainly.

The current problem with new technologies, as some of the other witnesses have highlighted, is that there are no standards for many of these methods. We either have very specific standards for incinerators, or we have very general standards for tanks.

It is my understanding that it is the EPA's belief that in the vast majority of circumstances they could use the tank standards to be used as a method of permitting. That I think would not be an ideal situation. I believe it would be more of a crisis situation for them to have to use tank standards for all forms of alternative treatment.

I would like to offer a series of recommendations in closing to complement what you have done in the amendment you offered to the RCRA bill a couple of weeks ago, which the Council strongly supported that we think could lead to an accommodation of some of the problems that we have heard about this morning.

In addition to closing many of the regulatory loopholes, as several other witnesses have identified, the EPA simply needs additional resources. From the information that we have been able to see, several of the regional enforcement efforts are going to be given additional resources, but the core program at headquarters, where many of the permits will have to be issued and certainly where some of the standards will have to be developed for alternatives, the resources simply are not being provided.

In addition, the definition of treatment must not be allowed to be a semantical dodge similar to that which currently exists for recycling. A process is not a treatment process simply because someone decides to call it such.

As the chairman has noted in the legislative history accompanying the amendment, the current regulatory definition of treatment

is so broad as to encompass virtually any waste processing activity no matter how cursory.

For example, the mere addition of kitty litter to a barrel of spent solvent would qualify as a solidification process even though the absorbent material acts as little more than a sponge for the waste until subsequent pressure allows release of the waste into a free form.

Treatment also is defined as evaporation, even though there are no limits on what types of materials can be evaporated. Unless air emissions limitations are imposed on land disposal facilities, particularly surface impoundments, allowing mother nature to do the treatment through solar evaporation will do little more than shift certain wastes from the land to the air.

In addition, any definition of treatment must be amended to place primary emphasis on the extent to which a given method can demonstrate a permanent reduction, elimination, or containment of the hazards associated with the waste through a biological, chemical, or physical transformation or containment.

Processes such as volume reduction and evaporation cannot be allowed to be final treatment processes but rather only as components of a treatment tier that leads to the permanent transformation or containment of the waste.

The goal of allowing for the demonstration of new and innovative treatment methods must be to either provide increased protection of public health over those that are currently permitted or to provide equal protection with greater efficiency.

New and innovative methods should connote true experiments on a pilot, not a commercial-scale facility.

To facilitate the most basic research into the development of alternatives, bench scale operations could be subject to an even more simplified notice requirement for the Administrator prior to commencing the experiment, so long as the experiments involved truly small quantities of waste, such as less than one kilogram. For certain wastes, such as dioxin-containing materials, the Administrator would retain the right to require the demonstration permit procedure.

In order to balance the various interests once the 1-year demonstration period had been completed, the provision might be amended to allow for a fixed operating period of 18 months of operation rather than 1 year, with an interim review of 9 months to determine whether the projected operating and performance characteristics of the unit were being met.

As a practical matter, 18 months worth of operating days will allow for closer to probably 2½ years of calendar time of operation and would likely provide the necessary time for concurrent permit standard issuance and review.

In conclusion, the council appreciates the opportunity to appear here today and will be happy to work with yourself and the staff to develop any refinements or complementary activities relative to your amendment.

Thank you.

Mr. SKELTON. You have been very kind in the past. We appreciate that.

[Mr. Fortuna's prepared statement follows:]

PREPARED STATEMENT OF RICHARD C. FORTUNA, EXECUTIVE DIRECTOR, HAZARDOUS WASTE TREATMENT COUNCIL

Mr. Chairman, members of the Subcommittee, I welcome the opportunity to appear today on behalf of the membership of the Hazardous Waste Treatment Council to discuss the role of public policy in bringing about the use of innovative technologies for hazardous waste treatment. The Treatment Council also would like to applaud your leadership Mr. Chairman in amending the Hazardous Waste Control and Enforcement Act of 1982 to provide explicit authority for the Administrator to grant research, demonstration and development permits for new and innovative treatment technologies. We would also like to express our appreciation for having the opportunity to work with you and your staff in developing this important amendment.

The Hazardous Waste Treatment Council (HWTC) is a national association of firms which believes that technological methods of treatment should be employed as the primary method of hazardous waste management, and that the use of land disposal facilities should be restricted to wastes that have been pretreated to prevent migration and release and for the stabilized residues of treatment processes. The Council membership represents a spectrum of large to small firms that are engaged in virtually all forms of thermal, chemical and biological treatment, as well as appropriate forms of land disposal. Included in the Council membership are several firms that are currently attempting to develop and market innovative methods of thermal treatment.

My presentation this morning will address: the obstacles that all forms of treatment face under current hazardous waste law and regulation; the specific problems of new treatment methods including an examination of the delicate balance between creating incentives while not inviting abuse and recommendations for potential remedies to the problems faced by innovative firms.

IMPEDIMENTS TO THE USE OF TREATMENT

This month marks the seventh anniversary of the enactment of the Resource Conservation and Recovery Act (RCRA) this nation's basic authority governing the generation, transportation, storage and management of hazardous wastes.

While these seven years were ostensibly dedicated to resolving many of the hazardous waste management problems before us, in reality we learned far more about the problem than we have instituted solutions to them. Perhaps the fact that the 1976 Act gave the EPA only 18 months to promulgate all necessary regulations governing the generation and management of hazardous wastes provides the best insight into our matured comprehension of the magnitude and gravity of the problems we face.

The 1976 Act and its 1980 amendments both spoke to the desirability of the increased use of treatment and decreasing the reliance on land disposal, but of all the things that have not changed since 1976, this is the most notable. The vast majority of all hazardous wastes continue to be land disposed rather than treated or pretreated prior to disposal this includes not only landfills, but to an even greater degree disposal into surface impoundments and underground injection wells. Moreover, the vast majority of our present "superfund" sites are land disposal facilities that were unable to contain the wastes that were placed within them. Unless this reliance is changed through explicit restriction on the types of wastes that can be land disposed we will continue to witness a proliferation rather than a reduction in the number of "superfund" sites. If there is one unmistakable lesson that has emerged since 1976 it is this, land disposal practiced without restriction is a pay now or pay later proposition—there is no free lunch.

Another fact or life in the management of hazardous wastes which the treatment industry is all too aware of is that hazardous wastes are like water running down hill; they will always be disposed of along the path of least regulatory control and least cost. The market alone is an unreliable and indifferent broker when it comes to insuring protective management of hazardous wastes in a cost competitive environment. The forces that establish the lowest marketplace cost also underwrite the methods which provide the least protection for public health and the environment when practiced without restriction.

The specific reasons for low cost, unprotective land disposal are numerous: little capital is required unfront; there are no inherent limitations on what can be placed into a land disposal facility; many preventive measures such as dual liners and groundwater monitoring are either not required or avoided due to weak regulations and "grandfathering;" ultimate liability for the facility after closure may be shifted

to governmental entities; and protection of public health is predicated solely upon physical barriers that cannot contain many wastes that are so disposed.

Just as the regulations and the inherent nature of the practice places no restriction on land disposal, a treatment facility invests the majority of its capital before a single load of waste is ever received, must operate or strives to operate under stringent standards governing process efficiency and duration, and are specific to given waste streams. Unlike land disposal, there is no current treatment method that can process all types of wastes. Most importantly, it will always cost more to permanently render a waste non-hazardous at the time of generation under controlled conditions, than it will to simply bury or inject and hope. The desire for increased certainty and permanency in the protection of public health and the environment costs for proper and protective hazardous waste treatment.

While treatment provides greater certainty that wastes will be prevented from causing future threats to public health and the environment, certainty is a two way street. The regulations and policies governing hazardous waste management must insure that there will be a market for something other than unrestricted land disposal. Until all forms of hazardous waste management are required to play by the same rules with the common denominator being equal protection of public health and the environment and not simply the lowest cost, and without an explicit policy and legislative directive that prohibits the land disposal of certain hazardous wastes, the much hoped for transition to treatment is little more than a pipe dream. As a recent article in the Wall Street Journal recently observed, "There is a lot of risk involved in designing and siting a waste treatment plant. Why should a company take a technological risk along with other risks?" One might also querry as to why a society that prides itself on high-tech innovations has a no-tech approach to hazardous waste management?

In addition to the afore identified weakness in the land disposal regulations and the inherent differences between treatment and disposal there are numerous other serious loopholes in the current regulatory coverage of hazardous waste generators, facilities, and wastes themselves that similarly allow wastes to be disposed in an unprotective manner and without proper treatment.

These loopholes have been the focus of several studies, most notably the Office of Technology Assessment report which was issued earlier this year, and several Congressional investigations conducted pursuant to the RCRA reauthorization have throughly identified the scope and severity of these deficiencies. Suffice to summarize at this point that more generators and individual waste streams are exempt than are subject to present regulatory coverage: the hole is literally bigger than the doughnut. In addition, many hazardous wastes facilities themselves are exempt from RCRA coverage. This is particularly true for facilities such as industrial boilers, furnaces and kilns which can burn hazardous wastes for the purpose of energy recovery without regard to destruction efficiency or emissions limitations because the energy recover of these facilities is currently deemed to be a "beneficial recycling" activity. It simply makes no sense from either a public health or market equity standpoint to subject incinerators to stringent levels of destruction efficiency, while exempting every other facility that puts a flame to waste on the basis that their primary purpose is to recover energy.

One other example regarding the lack of waste stream coverage vividly illustrates the patchwork guilt of regulatory coverage that is in turn stifling the use of ultimate methods of hazardous waste treatment. The EPA recently took the virtually unprecedented action of banning most of the pesticide uses of ethylene dibromide (EDB) on the basis of its potential to cause several chronic irreversible diseases in humans. While the product itself has been banned from use as a pesticide, the wastes from the production of EDB are not subject to control as hazardous wastes under current RCRA regulation. The same situation exists for most pentachlorophenol wastes, a wood preservative that contains various species of chlorinated dioxin.

The transition to treatment cannot and will not be built upon the ethereal "incentives" or "encouragement" of previous legislation and the direct incentives and disparity of current regulations. Clearly, the "incentives" of previous efforts are little more than monuments to our lack of understanding and judgment about the necessary policies that would truly stimulate investment in and use of treatment.

While illegal disposal and the failure to enforce existing regulations allow the continuation of improper management practices, virtually every current treatment operator views legal loopholes and regulatory deficiencies as a far more serious threat to public health and to their continued operations than illegal disposal and lax enforcement combined. In short, so long as there are so many legal ways to dispose of wastes that are the environmental equivalent of illegal dumping, treatment

methods both new and existing will not emerge in the manner that this nation has been expecting since 1976.

The perversity of current policies governing treatment and disposal is punctuated by the findings of a recent National Academy of Sciences (NAS) report, which found that methods now exist to treat every waste that is being generated. Moreover, this country is not starting from scratch in terms of available commercial capacity to initiate the transition. In fact, the vast majority of the treatment firms that the Council has surveyed reported unused existing capacity in 1982 between 30–50 percent.

The Council is currently compiling data on available and projected treatment capacity for those wastes that are scheduled for statutory land disposal prohibitions, and will be releasing this information in the near future.

The Treatment Council is hopeful that the amendments to RCRA as contained in the Hazardous Waste Control and Enforcement Act will be enacted in the near future. If properly implemented and if this vital legislation does not become the captive of the exemption lobby, the nation can at last take comfort in knowing that the beginning of the end has arrived for unrestricted land disposal, and that the primary use of treatment will become reality.

SPECIFIC PROBLEMS FACED BY NEW TECHNOLOGIES

While the establishment of a more comprehensive national program and the instituting of specific prohibitions and restrictions on land disposal will provide the conditions for healthy competition within the treatment industry and in turn enhanced protection of public health and the environment, the actual permitting of facilities to handle the wastes within the time frames that are envisioned is yet another matter. This concern is particularly acute for those firms that are currently engaged in the development of new and innovative methods of waste treatment.

Currently, there are few performance standards upon which treatment facility permits can be based. Outside of the very specific incinerator standards, and the very general standards for treatment in tanks, no other standards currently exist. While methods currently exist to treat all forms of hazardous wastes that are generated, methods are under development that vary from existing treatment technologies, and yet additional research is being conducted to increase the efficiency of many existing methods of treatment. Unless there is a mechanism by which these approaches and improvements can be tested on a pilot scale that reflects likely commercial performance, many beneficial developments may be indefinitely delayed. I would add that all treatment firms, whether large or small, currently face this problem.

Presently, such firms must attempt to procure enforcement discretion letters for Regional EPA Administrators to allow the demonstration of a technology for which performance or operating standards do not exist. This process implies that there is something inherently wrong with attempting to demonstrate a new technology, and is subject to widely varying and arbitrary determinations. Such matters should be dealt with through an explicit authority to grant permits under controlled conditions for limited periods to determine the viability of the given method.

Toward this end, we believe that your amendment to the RCRA bill, Mr. Chairman, is both a constructive and balanced approach to the problem. It allows for the Administrator to issue permits for such situations for up to 365 days of operation under modified permit proceedures while retaining full authority to impose whatever conditions may be necessary to protect human health and the environment during the demonstration period and maintains the public hearing and participation process as it would otherwise apply to a hazardous waste facility. The difficult questions remain as to what the status of the facility would be upon completion of the one year demonstration period. Would it have to wait for the issuance of final standards before continuing or would it be allowed to continue operations until final performance and operating standards issued and the permit reviewed? The issue here is to balance three competing yet complementary interests: insuring a fair test of a new method while neither inviting abuse of the modified permit procedure nor insulating the public for its right to participate in the permitting.

RECOMMENDATIONS

I would like to offer a series of recommendations that address these and other concerns attendant to the implementation of a provision to facilitate the emergence of new and innovative methods of hazardous waste treatment:

In addition to closing the many regulatory loopholes and enacting prohibitions on the land disposal of certain wastes, the EPA simply needs additional personnel and

resources to cope with the many permitting and regulatory development tasks before it. From the information made available to the Council, it does not appear that such resources will be forthcoming for the core requirements of these programs;

The definition of treatment must not be allowed to be a semantical dodge similar to that which currently exists for "recycling." A process is not a treatment process simply because some decide to call it such. As the Chairman has noted in the legislative history accompanying the amendment, the current regulatory definition of treatment is so broad as to encompass virtually any waste processing activity no matter how cursory. For example, the mere addition of kitty litter to a barrel of spent solvent would qualify as a solidification process even though the sorbent material acts as little more than a sponge for the waste until subsequent pressure allows release of the waste into a free form. Treatment also is defined as evaporation, even though there are no limits on what types of materials can be evaporated. Unless air emissions limitations are imposed on land disposal facilities, particularly surface impoundments, allowing mother nature to do the treatment through solar evaporation will do little in addition more than shift certain wastes from the land to the air. Any definition of treatment must be amended to place primary emphasis on the extent to which a given method can demonstrate a permanent reduction or elimination of the hazards associated with the waste through a biological, chemical or physical transformation or containment. Processes such as volume reduction and evaporation cannot be allowed to be final treatment processes, but rather only as components of a treatment tier that leads to the permanent transformation or containment of the waste;

The goal of allowing for the demonstration of new and innovative treatment methods must be to either provide increased protection of public health over those that are currently permitted, or to provide equal protection with greater efficiency;

New and innovative methods should connote true experiments on a pilot not a commercial scale facility;

To facilitate the most basic research into the development of alternatives, bench scale operations could be subject to an even more simplified notice requirement to the Administrator prior to commencing the experiment, so long as the experiments involved truly small quantities of waste, such as less than 1 kilogram. For certain wastes such as dioxin-containing materials, the Administrator would retain the right to require the demonstration permit procedure;

In order to balance the various interests once the one year demonstration period had been completed, the provision might be amended to allow for a fixed operating period of 18 months of operation rather than one year, with an interim review at 9 months to determine whether the projected operating and performance characteristics of the unit were being met. As a practical matter, 18 months of actual operation would allow for closer to 2–2½ years of calendar operation and would likely provide the necessary time for concurrent permit standards issuance and review.

The Council appreciates the invitation to appear before the Subcommittee this morning, and welcomes the opportunity to be of further assistance in the development of an approach to the permitting of new and innovative treatment technologies.

Mr. SKELTON. Mr. Hiler?

Mr. HILER. Thank you, Mr. Chairman.

Mr. Kazarian, the previous witness said he thought the future in dealing with hazardous waste would be for small business, that large corporate entities would not become involved in this area. Do you think that is an accurate assessment?

Mr. KAZARIAN. I think it is going to be a combination. I think the biggest threat to small businesses though is the long-term liability associated with the handling of hazardous waste. The financial burdens of dealing with it and the long-term liability requirements may drive a lot of small businesses out of the business of handling hazardous waste, so we may see some opposite effects.

As far as developing the technology, yes, I think it is going to be an area where small business can be effective. In the long term, many of the financial requirements may prove to be too burdensome.

Mr. HILER. If you could take the hazardous waste problem that exists, as broadly defined as you want to define it, if you had it in your control to do one thing that you could today write down on a piece of paper and it would be done—one thing—what would that one thing be?

Mr. KAZARIAN. I think enforcement and regulation would have to not concentrate on a few large generators or disposers, but it would have to be applied equally across the board. That would be the one single thing I think that could change a lot of the problems that we have in this industry today.

Too much emphasis is put on enforcement and doublechecking the legal operators. If we took half the enforcement people out investigating legal operators today and just had them turning over rocks, you would be surprised what they would find.

Mr. HILER. Thank you, Mr. Chairman.

Mr. SKELTON. Thank you.

Mr. Torres?

Mr. TORRES. Thank you, Mr. Chairman.

I am sorry I was late. I do want to thank you for convening these hearings. I think they are very important in terms of the carryover from the hearings that you held in California at West Covina. We heard from BKK and certainly want to welcome Mr. Kazarian here again today.

Just a question. This is your in-house publication, I gather, the West Covina Chronicle?

Mr. KAZARIAN. Yes, sir.

Mr. TORRES. I note here that the paper indicates the jurisdiction of hazardous waste disposal in California is, to say the least, fragmented. There are 16 governmental entities of Federal, State, county, and municipal nature.

Can you give this committee some insight into the kind of governmental briar patch, so to speak, that you have been thrown into when you try to bring your new technology into being, into line?

Mr. KAZARIAN. One good example right now would be in the permitting process for the Los Angeles-Long Beach facility, which is another treatment facility we are attempting to site. We have to get a permit to construct from the local air quality management district.

We just received a letter, and they are talking right now that they are going to want to give us a specific list of each waste product based on the process which generated it, a specific breakdown of exactly what it is, and they will give us an initial list and then any other customer that wants to come in and use our facility will have to go through that process again.

That is more getting toward regulating the facility not for air quality but specifically regulating all the industries who would want to use it. The problem that we have with that is once you have the technology that can neutralize an acid waste bearing heavy metals, it really doesn't matter what process is there. The chemistry is basically the same for all of them. Yet, we are going to have to go through a whole other set of paperwork if that ends up being one of our requirements.

Every time we get burdened with another requirement, it is another cost that our customers are going to have to bear. Everybody

seems to be wanting to get into the business of regulating toxic wastes these days.

Mr. TORRES. This is one specific agency that you are talking about?

Mr. KAZARIAN. This is just one agency, yes. That is a new thing that they are going to be asking us to do. How that ends up I really can't say at this point, but that is a point of discussion on their point.

Mr. TORRES. This happens at each of those various governmental levels that we are talking about?

Mr. KAZARIAN. Yes, basically from every one of them, depending on what their particular interests are.

Mr. TORRES. Is there no coordination between any of them that this information can be shared?

Mr. KAZARIAN. It is getting better. What we did in the designing of the Los Angeles facility in the State of California, the Governor had an office of permit assistance that he established.

Prior to doing a lot of engineering and a lot of work, we had a meeting through that office with every regulatory agency who would be involved in the project. We made a presentation explaining what we were going to be doing and open it up for questions or their concerns, so before we spent hundreds of thousands of dollars drawing blueprints trying to live up to what we thought their idea of treatment was, we got that input before we spent those dollars.

So, there has been some help, but when you get down to interpretation of specific laws from one agency to the next, you can get thrown backward for every step you think you are going to go forward because it all depends on who is interpreting what and when they think it should come under their agency.

Mr. TORRES. Thank you, Mr. Kazarian.

Mr. Chairman, I yield back the balance of my time.

Mr. SKELTON. Thank you.

Mr. Kazarian, do you think that BKK, being a rather large and more experienced waste management firm, has an advantage over smaller, newer waste management firms, especially in the so-called starting up phase of the operations?

Mr. KAZARIAN. We have probably more experience in dealing with the materials simply because we see them coming into our land disposal facility every day. As far as getting into business and operating, we are basically in the same boat with everyone else. One witness was saying how he had to fill out the applications and they were all based on land disposal. We have had the same problems.

Mr. SKELTON. Mr. Fortuna, would you be kind enough to comment on the importance of waste reduction, namely the reduction of the amount of waste needing disposal; in the larger picture, waste management. In other words, how can innovative technologies for waste disposal encourage waste reduction?

Mr. FORTUNA. If I might go back to the question that Congressman Hiler asked, too, of the first and most basic step that has to be taken in this entire area, and as Mr. Kazarian noted, is the elimination of cheap alternatives, not just because they are cheap but because they are unprotective.

Once we are insuring that everybody is playing by the same rules and we don't have some people being able to escape controls through semantical distinctions or through out and out exemptions in the regulations, then I think we can at least begin a more concerted transition to the primary use of treatment which I think will in turn feedback to the process themselves in the form of volume reduction.

The best way to treat a waste is not to generate it in the first place. As we eliminate some of the very cheap and unprotective alternatives, not only will we be treating waste in properly, but also people will be back calculating the cost of generating the material in the first place and seeing if it might not even be cheaper not to generate it rather than to ever to treat it.

I think that the first and foremost step in terms of both protection of public health as well as moving toward volume reduction is indeed in eliminating the cheap and unprotective alternative methods of disposal.

Mr. SKELTON. You state on page 4 of your written testimony that the vast majority of the treatment firms that the council surveyed reported unused existing capacity in the year 1982 between 30 percent and 50 percent.

Mr. FORTUNA. That is correct.

Mr. SKELTON. Do you know why that much capacity was installed then, and how are the firms surviving with so much unused capacity?

Mr. FORTUNA. As I mentioned earlier, what happened in 1976 and 1980 seemed like a good idea. People invested on the expectation that firms would start using treatment, that it would come about as a matter of course, that with the advent of the 1980 regulations beginning to put in place a framework for managing and hazardous wastes that people would again just be naturally seeking out alternatives.

Indeed, all we now find is that we have more creative ways of avoiding regulation through various exemptions. So, it is in that sense that we see many of the problems occurring.

The way in which many of the firms are surviving right now in terms of some of the incinerators, is attributable to the PCB regulations themselves. In contrast to what other witnesses have stated, we would probably only have a fraction of our current incineration capacity on line right now, if it were not for the PCB legislation and subsequent regulations which have provided a stable market for proper management of these water.

In fact, it is only the people who have the capability to incinerate PCB's that are at all in a stable position. Many of the other firms who are in the incineration area, are either very closely situated to some of their major markets and they can keep transportation costs down or are incurring losses hoping that, indeed, many of these loopholes are closed sooner, rather than later, so that they can achieve a profitable posture.

The last thing any firm wants to do is lose its customers and then shut down and then have to go back and try to get them. So many of them are in a situation where they are barely surviving or losing money just to keep their customer base.

Mr. SKELTON. Thank you very much.

If there are no further questions, we thank you gentlemen for being with us. As I mentioned before, your formal testimony will be written in the record.

Mr. KAZARIAN. Mr. Chairman, there is one thing I would like to include into the statement today regarding the Stringfellow site. A couple of statements were made earlier that I would like to clarify.

No. 1, the waste which is being pumped out of Stringfellow at this time is not coming to our West Covina landfill. It is going to another land disposal site north of us. The site is not leaking. The reports of the site leaking are merely the end result of a few reports trying to interpret an EPA report. That is what the bottom line was.

Mr. SKELTON. They were in error?

Mr. KAZARIAN. The inspection was based on a couple of assumptions which through the monitoring and its different category from what we were being required to monitor from, and based on those assumptions it was assumed that if we were not meeting specific regulations, then we probably were leaking, also. So, it was assumptions based on assumptions.

The last thing I would like to say is BKK also has had a proposal under the State of California for the treatment of the Stringfellow leachates. We have been able to clean those leachates up to the point where we could meet Federal drinking water standards. We have had a couple of problems. There has never been a clearcut proposal given to industry to even respond to. Mr. Fortuna said what is treatment, whether we are going to neutralize it, mix it in smaller batches from big batches or what. We haven't given a set of specifications, so how clean is clean; that is one of our problems.

We have also been frustrated knowing that we have the ability and have demonstrated the ability to clean up those leachates but have not had a real good, strong set of circumstances to respond to.

Mr. SKELTON. Thank you for adding those comments.

Thank you, gentlemen, very much.

Mr. TORRES. Mr. Chairman, if I might, in my questioning of the witness I mentioned a newspaper article. I would like to seek unanimous consent to enter that article into the record.

Mr. SKELTON. Without objection.

Mr. TORRES. Thank you.

Mr. SKELTON. Thank you for bringing that to our attention.

[The article referred to above follows:]

Many Agencies Rule Liquid Waste Plant

By STEVE COMUS

As steps are underway to install one of the world's most advanced industrial liquid waste treatment facilities in Wilmington, it becomes readily apparent that a bevy of governmental agencies are involved in the planning and eventual operation of such a facility.

For example, there are 16 governmental entities with enforcement jurisdictions at the facility, not to mention those with enforcement jurisdictions where the wastes are generated and between the generator and treatment plant.

On the federal level, there is the **U.S. Environmental Protection Agency**: A federal agency responsible for hazardous waste treatment and disposal. The EPA administers the Resource Conservation and Recovery Act.

At the state level, there are five agencies involved:

California Department of Health Services: This agency would issue a hazardous waste treatment facility permit and retain primary responsibility for enforcement of all permit conditions. The agency also would insure that operations are conducted in accordance with an approved operation plan, that the contingency plan is up-to-date, and also issue haulers permits to all commercial waste transporters using the facility.

California Department of Transportation: This agency would assist in assessment and cleanup of any hazardous waste spills on state highways.

California Highway Patrol: The CHP is designated as the lead response agency for waste spills on state highways and conducts annual inspections of hazardous waste trucks.

California Division of Occupational Safety and Health: This agency is responsible for employee safety and health in the work place.

California Department of Water Resources: Is responsible for the protection of surface and ground water resources.

Regionally and locally, there are nine agencies involved:

Southern California Air Quality Management District: Reviews the facility design and issues an air quality permit for the facility as a stationary source. The agency also retains enforcement authority for conditions of the permit.

Los Angeles City Department of Planning: Coordinates the preparation and circulation of the Environmental Impact Report.

Los Angeles Department of Building and Safety: Reviews detailed construction plans and specifications for the facility for conformance with all the applicable building codes. The agency, subject to this review, will issue a building permit. Inspectors will be present during construction to insure conformance with construction specifications.

Los Angeles Bureau of Sanitation: Reviews project design and issues an industrial waste discharge permit for discharge of treated affluent to the sewerage system. The agency also issues sewer construction permits and retains enforcement authority to insure discharge requirements are met.

Regional Water Quality Control Board — Los Angeles Region: This agency is responsible for the protection of surface and ground water resources.

Los Angeles Department of Transportation: Reviews project plans for impact upon the traffic patterns. The agency has the authority to place requirements upon the owner to mitigate traffic impacts of the proposed project.

Los Angeles Fire Department: This is the lead response agency for a spill of hazardous waste on city streets or for a hazardous waste accident at the facility. The agency has continuing enforcement authority to insure that fire codes are not violated.

Chronicle photos by Steve Comus

Ken Kazarian

Los Angeles Police Department: Is responsible for traffic, safety and law enforcement.

Los Angeles County Department of Health Services: This is a contract agency for the City of Los Angeles in this case.

Mr. SKELTON. Next is Ted Reese, from Cadence Chemicals, Michigan City, Ind.

Mr. HILER. Mr. Chairman?

Mr. SKELTON. Mr. Hiler?

Mr. HILER. Mr. Chairman, if I may take 30 seconds here. Mr. Reese is from my congressional district, or just on the edge of it—I am not sure whether he is in or out anymore with redistricting. But, Mr. Reese and I have had several conversations over the past couple of years on the subject of how to deal with hazardous waste and to use it as a resource as opposed to merely as a substance that has to be gotten rid of.

Ted won a very significant award in 1981, I think it was.

Mr. REESE. Yes, that is correct.

Mr. HILER. The exact award was what?

Mr. REESE. In March 1982 we received the Award for Excellence in Hazardous Waste-to-Energy by Small Business presented by the Environmental Industry Conference.

Mr. HILER. So, Ted is a national award winner. I think you will find his testimony to be very interesting today.

Mr. SKELTON. We appreciate recommending that he come.

Mr. Reese, we look forward to hearing from you.

TESTIMONY OF THEODORE J. REESE, PRESIDENT, CADENCE CHEMICAL RESOURCES, INC.,

Mr. REESE. First I would like to say good morning, Mr. Chairman, and committee members.

This morning I have been listening to various testimony which primarily dealt with landfills and incineration. Those are disposal, destruction techniques. I am here to talk about RCRA, conservation and recycling, and to acquaint you with our technology.

My name is Theodore Reese. I am the founder and president of Cadence Chemical Resources, Inc., a hazardous waste recycling company with licensee facilities in Indiana, Ill.

Mr. SKELTON. I might interrupt you. If you would like, without objection, we could enter your statement in the record and you could summarize it.

Mr. REESE. Surely.

One of the difficulties about my business is trying to condense 2 hours of——

Mr. SKELTON. You can't do it in 25 words or less, I understand.

Mr. REESE. Exactly.

Mr. SKELTON. Feel free to proceed any way you would like, but we did make that comment earlier, probably before you came here, that written testimony may be entered and the witness may summarize.

Mr. REESE. I will try to summarize and perhaps I will cover it in about 15 minutes. I also brought some slides with me this morning that will clearly illustrate and demonstrate our technology. We have licensee facilities in Indiana, Illinois, Michigan, Ohio, Kentucky, New Jersey, Connecticut and Alabama.

Cadence converts flammable hazardous waste into a product called Chem-Fuel. Chem-Fuel is used exclusively as a source of energy and raw material in the iron-making process of the blast

furnace. We have a patent pending on that technology. We have also applied for patents in 14 other countries. As Congressman Hiler indicated, we were pleased to receive the Award for Excellence in converting hazardous waste-to-energy by small business in 1982.

My purpose here today is twofold. One is to acquaint you with our business and technology and, second, to make some comments regarding the regulations and emotions that exist pertaining to our technology.

Perhaps I should first talk about my background. I am a graduate chemical engineer, 1964, from Syracuse University. Upon graduation I went to work with the Shell Chemical Co's. industrial chemicals. There I gained a very strong background in the manufacture and use of industrial chemicals and solvents in this country. While at Shell I played roles in market research, product development and marketing.

When I was on marketing assignment in upstate New York in 1968, I first became aware of the byproducts from industries that we were selling our products to and the need for a very professional firm to collect those wastes, and to process those wastes.

In 1969, before EPA was created, I was a cofounder of one of the first regional processing facilities in this country, called Chem-trol Pollution Services. There we developed technology to collect and process the organic and inorganic materials that were coming out of the factories and had to be managed as wastes. At that time they declared Lake Erie a dead lake. In developing this regional processing facility, we developed techniques for high temperature thermal oxidation with scrubbers, neutralization technology, and secure landfill.

In 1972, when chemicals became short and energy became short, we started to shift our emphasis from destruction and disposal to recovery and recycling. We developed solvent recovery, fractionation, as well as started the utilization of those energy-bearing waste materials as beneficial fuels. I sold that business to SCA Services in 1973 and left shortly thereafter to expand the technology of recovery and recycling.

In 1975 I founded Cadence Chemical Resources, Inc. in Michigan City, Ind. I realized at that time, there were enough combustion devices in this country and the emphasis should be with collecting the hazardous waste materials, putting it in a form, so that existing combustion facilities could beneficially utilize the energy and safely consume the byproducts of combustion. Great emphasis was to be placed on safely consuming these byproducts of the combustion.

That concept was the backbone to the development of my business. I evaluated proper end uses for the material. For many years I utilized cement kilns and in 1979 developed the novel, unique end use in the blast furnace for our Chem-Fuel product.

Volume is very important. Cadence license existing solvent recovery facilities in this country to produce Chem-Fuel. Many of these firms are small businesses that have the experience and the technical knowhow working with solvents. They first recover the solvent, and then the leftover residue, as well as other energy-bear-

ing waste materials that don't have sufficient solvent value are incorporated as the feed stocks to produce Chem-Fuel at those plants.

I would like to show a few slides at this time.

Mr. SKELTON. Will you for the record supply copies of these, if that is possible? It may not be possible.

Mr. REESE. Sure, we can try.

[The witness was unable to supply the committee with copies of the slides.]

Mr. REESE. This slide shows solvents and recovered solvents are utilized in our marketplace. Recovering solvents is a business that started in 1953 and has grown in the sixties and the seventies. They recover the solvent, return it to industry, and something is left over. What is left over, as well as the energy-bearing materials which do not have sufficient solvent value, exits the loop and that is the feedstock for our product. That leftover material is called hazardous waste and that is used to produce our Chem-Fuel product.

[A slide was shown.]

The following are various examples of solvents; these same solvents are found in paints, paint thinners, nail polish remover, and so forth. If those materials are discarded, they are called hazardous wastes.

[A slide was shown.]

The next series of slides are examples of various waste generators. This is a paint manufacturing facility; they use solvents, and they have spent materials, hazardous wastes that go to make up our Chem-Fuel.

[A slide was shown.]

The automotive industry generates hazardous wastes.

[A slide was shown.]

Small metal shops degrease their parts. Those spent solvents are hazardous wastes, all of which are used to make up our Chem-Fuel.

[A slide was shown.]

The electronics industry, they utilize solvents and have leftover materials. We could give many more examples of the pharmaceutical industry, and so forth. All manufacturing processes use solvents, and some portion is left over and needs to be managed.

[A slide was shown.]

The next series of slides are typical of a Cadence licensed processing facility. As I mentioned, we have seven companies processing at nine locations in the United States for us. This slide is of our first processor, to American Chemical in Griffith, Ind. They began processing for us in 1977. They recover solvent manufacture chemicals and produce Chemi-Fuel. On the lefthand side is the solvent reclamation part of the business. On the righthand side is our Chem-Fuel production operation.

[A slide was shown.]

The hazardous waste materials are manifested to this TS&D facility in accordance with EPA regulations. The wastes arrive in bulk tankers and they arrive in drum truckloads.

[A slide was shown.]

This is an example of a vacuum truck. Before any material enters the process, a sample must be taken and evaluated in a lab-

oratory to make sure that products can be made from this inbound material.

[A slide was shown.]

This is an example of taking a sample from drums containing waste. All drums are sampled and checked in the laboratory.

[A slide was shown.]

Inbound wastes must be manifested into the facility, lab scanned to be sure that they are what they are supposed to be, and process simulation to be sure products can be manufactured from the inbound materials.

[A slide was shown.]

The next series of slides are various shots of the laboratory. This is a gas chromatograph, a workhorse for determining organic composition of the waste materials.

[A slide was shown.]

Once the inbound sample has been evaluated, checked, and found to be on spec, then the material can be unloaded into the reclamation system.

[A slide was shown.]

Drums are pumped into a batch tank prior to production.

[A slide was shown.]

This is a partial view of some of the equipment used for Chem-Fuel processing. We utilize mechanized and particle sizing equipment to develop our product to a specification which includes a minimum Btu of 10,500 Btu's per pound, a chloride spec of between 1 to 5 percent, and so forth.

[A slide was shown.]

Tanks are required to receive the inbound materials, for processing into Chem-Fuel. On the lefthand side are vertical tanks, agitated, containing our finished product inventory. We are shipping out of inventory to our customer while we are preparing new batches.

[A slide was shown.]

These are samples of hazardous waste, recovered solvent, and Chem-Fuel. On the lefthand side a multilayered mixture with some residues in it. At this facility they recover pure solvent, note sample in the center, and on the righthand side is our produce, Chem-Fuel. It is an emulsion, milkshake type material, as I mentioned, which contains energy comparable to coal or greater.

[A slide was shown.]

At all of our processing facilities we retain samples of everything that comes into the plant as well as shipped out of the plant. We retain a sample for 120 days, make a composite of that, and we have samples that exists for several years. So, if anybody comes in and says what if, we can go to our sample and confirm the analysis of what is in the material.

[A slide was shown.]

The next series of slides describes our marketplace. The shaded area represents the area that we primarily gather feed stocks. The dark dots are processing centers. There are nine locations. Chem-Fuel is produced in existing solvent reclamation facilities that service both the small generator and the large generator. They process the materials into Chem-Fuel, and then we ship to our customer, who has multiple plants with blast furnaces in East Chicago, Cleveland, and near Pittsburgh, Pa.

[A slide was shown.]

Volume is very important to our business. This gives you an idea of our growth. In 1979 we were operating at several million gallons every year. We have grown. In 1981 we shipped out approximately 8 million gallons of Chem-Fuel, in 1982 about 15 million gallons, and we are presently operating at the rate of more than 30 million gallons of Chem-Fuel. This is all hazardous waste brought into our facility, processed into a product being beneficially used and consumed.

[A slide was shown.]

This was the recognition that we received in 1982.

[A slide was shown.]

I want to be sure I cover this subject thoroughly. The real reason for Cadence's unique strength is the fact that we possess the finest end-use technology in the world for the beneficial consumption of waste-derived fuel. This is an example of a blast furnace. We have a patent pending, as I mentioned, for the use of this material in the blast furnace.

All Chem-Fuel is consumed exclusively in the ironmaking blast furnace. It is a process with totally unparalleled thermochemistry and pollution control equipment with backup safeguards. Chem-Fuel is injected into the furnace in the lower zone where temperatures exceed 3,700 degrees Fahrenheit.

Via oxidation in the blast air and disassociation, all organic molecules in Chem-Fuel are totally converted into its basic elemental components. The carbon and hydrogen are used in ore reduction. Chlorides are beneficially consumed in reactions with alkaline materials naturally occurring in the ore, and the heavy metals become incorporated with either the slag, the molten iron or captured in the scrubbers and are permanently bound.

That concludes my slide presentation.

We think that we have an outstanding process for the beneficial reuse of hazardous energy-bearing wastes for the ironmaking blast furnace. This technology should be encouraged.

You invited me here today to explain to you our growth and our suggestions and solutions to remove obstacles. Here is one problem. There are many regulatory agencies overseeing our recycling activity, such as Federal EPA, regional EPA, State EPA, county and local agencies.

We have demonstrated our process to EPA headquarters and proven that it works. We are now constantly explaining to other agencies how our system works. Each agency seems to have their own interpretation of the Federal regulations or their own State regulations as to how they pertain to our recycling business.

We believe there should be a more uniform attempt to interpret the regulations as established by the Federal EPA. Once the Federal EPA establishes policy, then the regional EPA and State EPA should follow that interpretation.

There should be more of an awareness of the beneficial hazardous wastes recycling activity that presently exists in this country. The current practice of disposal by landfill, incineration, or boilers without proper or adequate scrubber systems should be minimized, and that waste material should be encouraged to be recycled or reused.

Positive publicity versus negative publicity. There should be some effort from the EPA and State agencies to publicize generators that recycle their wastes, bring to the public attention the positive side of how companies manage their hazardous waste rather than dwelling on what happened 5 or 10 years ago.

Finally, I would like to suggest the restoring of the recycling investment tax credit for the purchase of new and used equipment related to the recycling, transportation, and beneficial reuse of hazardous wastes.

Thank you. That concludes my comments.

[Mr. Reese's prepared statement follows:]

PREPARED STATEMENT OF THEODORE J. REESE, PRESIDENT, CADENCE CHEMICAL RESOURCES, INC.

May it please the committee, my name is Theodore Reese. I am president of Cadence Chemical Resources Inc., a hazardous waste recycling company with licensee facilities in Indiana, Illinois, Michigan, Ohio, Kentucky, New Jersey, Connecticut, and Alabama. Cadence converts flammable hazardous waste into a product called Chem-Fuel ®. Cadence is the recipient of the Award for Excellence in Hazardous Waste-to-Energy by Small Business presented by the Environmental Industry Conference in 1982.

PURPOSE

My purpose here today is two-fold. I want, first, to tell you about the important, unique role hazardous waste recyclers play in meeting the challenge of hazardous waste management in our society through the beneficial reclamation of waste. I also want to provide you with some suggestions for promoting the expansion of recycling and beneficial reuse of hazardous waste.

BACKGROUND

I would like to tell you about my background and describe the recycling and reclamation business of Cadence Chemical Resources, Inc. I graduated with a degree in Chemical Engineering from Syracuse University in 1964. From 1964 to 1969, I worked for Shell Chemical Company in the Industrial Chemicals Division. There I had exposure to research, product development and marketing of a variety of industrial solvents and chemicals. While on assignment in western New York State with Shell Chemical Company, I became familiar with the problem of proper disposition of waste industrial solvents. There existed a need for independent firms with technical expertise to properly dispose of this waste.

I left Shell Chemical Company in 1969 and founded Chem-trol Pollution Services, Inc. Chem-trol contracted with industrial concerns for the destruction of industrial solvents and chemicals that remained as waste residues after the manufacturing process. In 1973, I sold the company to SCA Services, Inc. Shortly thereafter, I left Chem-trol, believing there should be a greater emphasis placed by industry on recycling and reclamation of chemical wastes, rather than their outright destruction. In 1975, I founded Cadence and have built and expanded the business since that time.

Cadence is a Michigan City, Indiana firm whose licensees operate recycling plants in eight states. As I mentioned, it converts flammable hazardous waste into a usable fuel product called Chem-Fuel. Cadence has a patent pending for the Chem-Fuel end-use. Chem-Fuel is a registered trademarked product. Cadence's Chem-Fuel program has been undertaken with a view to furthering the stated goals of the Resource Conservation and Recovery Act ["RCRA"] by producing usable energy and materials from hazardous waste and reducing the demands on the nation's scarce and ever-dwindling non-renewable resources.

Chem-Fuel is produced solely for use in the high temperature iron-making blast furnaces of the steel industry as a cost-saving replacement for certain raw materials and much of the fuel oil they previously required. Chem-Fuel is an economic, effective substitute for coal, fuel oil, gas, coke, and other materials used in iron-making. Temperatures in blast furnaces typically run in excess of 2800° Fahrenheit. At such high temperatures, combustion and disassociation of all organic molecules are complete.

Most of Cadence's licensees are privately-owned companies and all are staffed by technically qualified personnel. All licensees have complete, on-site analytical laboratories and technical service staff, which allows them to deal effectively with waste generators which wish to manage their hazardous waste in an environmentally safe and cost-effective manner.

Chem-Fuel is produced from a combination of still bottoms from Cadence's licensee recovery operations and from other suitable energy-bearing waste feedstocks. It is best described as a pumpable mixture of solvents, resins, and suspended solids containing dissolved and emulsified water. Before processing, samples of potential feedstocks are obtained and analyzed for compliance with the raw materials specifications for Chem-Fuel. To meet the finished products specifications for Chem-Fuel, all incoming feedstock must be able to become fully incorporated into Chem-Fuel.

In a blast furnace, Chem-Fuel acts as a source of energy-bearing raw material which serves the dual purpose of providing an energy source and furnishing a processed raw material needed in the production of iron. The blast furnace is ideal for using and consuming the energy value of the chemical elements which comprise Chem-Fuel, particularly since the thermal and chemical environment of blast furnance, together with its inherent "closed loop" design and pollution control equipment, is unparalleled in other industries.

An extremely critical element for economically viable production of Chem-Fuel is overall volume. Chem-Fuel producers must be able to handle an array of recoverable and/or recyclable feedstocks in order to serve waste generators' disposal needs. Because Chem-Fuel is produced according to stringent, well-defined quality specifications (for example, 10,500 Btu/lb. minimum and chlorides of 1 to 5 percent by weight), Chem-Fuel producers may incorporate a wide variety of feedstocks into the final product as long as the final Chem-Fuel specifications are met. This ability to utilize fully a wide variety of feedstocks to produce Chem-Fuel enables Chem-Fuel producers to offer many types of waste generators a cost-effective, environmentally safe means of managing their hazardous waste, while at the same time offering Chem-Fuel consumers a fuel and raw material source at substantial cost savings.

Cadence has conducted extensive research to determine which wastes are available for beneficial re-use and how they may be converted to useable fuels. Cadence's business has grown to such an extent that from 1980 through today, Cadence's licensees received almost 65 million gallons of flammable solvents and sludges from automakers, paint and coating businesses, printing plants, plastic manufacturers and other industrial concerns. It converted that waste into approximately 63.7 million gallons of Chem-Fuel to be used as fuel in iron-making blast furnaces by the steel industry.

In the process of recycling this waste, Cadence eliminated 98 percent of the disposal problem the waste had presented. In addition, the Chem-Fuel produced by Cadence replaced 953,000 barrels of residual fuel oil which would otherwise have been necessary for fueling of those blast furnaces. This is enough residential fuel oil to meet the annual energy requirements of more than 14,000 of our country's homes.

We estimate that Cadence's processes saved the companies from which the waste was obtained more than $7.2 million in disposal costs. In addition, our customers saved more than $10.8 million in energy costs by burning Chem-Fuel instead of fuel oil, coal, gas and coke. These savings represent the tangible benefits of Cadence's recycling and reclamation efforts. Moreover, this recycling is done in complete conformance with all federal and state environmental requirements.

RECOMMENDATIONS FOR NEW POLICIES TO ENCOURAGE RECYCLING AND RECLAMATION

In describing the unique role played by recyclers in the recourse conservation and recovery field, I would be remiss if I did not address the obstacles which hinder the ability of recyclers to reclaim waste for beneficial purposes. Some of these obstacles are created by our own government and the agencies that are actually in the business of safeguarding our environment. I believe that opportunities exist for government to assist in the rapid development of this vital new industry by encouraging its growth and by eliminating existing roadblocks to development. I would like you to consider some of the following suggestions.

1. Streamline regulation by the Environmental Protection Agency [EPA]. —The recycling industry currently faces a fragmented, multi-layered regulatory structure. Although we have met with top officials at EPA headquarters and have had considerable success in convincing them of the value of reclaiming waste as Chem-Fuel, we frequently face different, sometimes conflicting, regulatory interpretations from staff at regional EPA offices and state agencies handling the day-to-day oversight of our operations.

The regulatory structure in the hazardous waste area is so multi-layered with federal, regional, state, and local agencies that the federal government seems unable to give a valuable, newly developed recycling technology a "green light" to exploit its beneficial uses. EPA has no mechanism in place which enables it to identify for its regional offices technologies which have proven their worth and which should be encouraged. Such a mechanism must be developed if needless duplication, delays, and other developmental obstacles at EPA regional offices and state agencies are to be avoided.

Cadence, for example, currently has licensee recycling plants located in three separate EPA regions and eight states. We have nad considerable difficulty obtaining consistent responses from the various EPA regional and state offices regarding the Chem-Fuel activity. In sum, a way—perhaps by development of a written certification of worthiness for a particular end-use issued by EPA headquarters—should be found to clear the way for full development of a new waste recycling process once EPA headquarters has determined that a new technology, such as Chem-Fuel, is valuable and has proved itself.

Not the least of these problems is the confusing and complex manifesting procedures established by EPA. Under current regulations, EPA sets standards for the storage and disposal of hazardous waste, but each state has its own manifesting system governing the transportation of hazardous waste from location to location. Our licensees often find themselves educating waste generators on the proper method for completing manifests since many small waste generators do not always understand state manifesting requirements and the licensees cannot accept waste for recycling unless it is properly recorded on the manifest. The absence of standardized procedures and forms from state to state makes the job much more difficult and confusing than it should be. I believe that a uniform federal manifesting system should be established to eliminate the needless complexity of the present system.

2. Establish limits to incineration and landfill.—It is often easier for generators of waste to relegate their waste to disposal by incineration or landfill rather than deal with the requirements of waste reclamation, including improved waste segregation and separate storage and handling of different types of waste products. The current practice of disposal by landfill or incineration of valuable recyclable resources should be minimized or stopped. A large part of flammable hazardous waste is a valuable resource.

Options are available to encourage the recycling of hazardous waste. Limits, for example, could be placed on the type of materials that can be destroyed by incineration or disposed of in landfills through EPA regulatory procedures. Moreover, incentives could be created to encourage all generators to consider, and perhaps opt for, reclamation and recycling of their wastes. A generator, for example, could be required to prepare an economic analysis for each type of waste it proposes to destroy, providing justification for his decision after comparison with price quotations from one or more firms qualified to perform beneficial recycling and reuse of the waste. An examination of the cost advantages to hazardous waste recycling may quickly convince a generator of the merit of that approach to its disposal "problem".

3. Encourage recycling and reclamation.—I would like to suggest that the restoration of the recycling investment tax credit (an added 10 percent investment tax credit over and above the existing 10 percent investment tax credit) for the purchase of new and used equipment related to the recycling or beneficial reuse of hazardous waste would be a significant incentive for the expansion of this industry. This investment tax credit was available between October 1, 1978 and December 31, 1982 under the IRS Code. Because of the nature of the waste being handled by our reclamation process, the plant equipment, especially pumps and grinders, must be frequently replaced. This tax credit is, thus, very significant for our business.

I would also suggest that this investment tax credit should be expanded beyond its former limits in order to include equipment used in the transportation of hazardous waste by recycling firms. Transportation equipment is an essential part of our business and must be sturdy, well-maintained and reliable if the transport of materials is to be achieved without incident.

In sum, I believe that the recycling investment tax credits are a sound investment in the country's environment and in an energy-efficient future. They should be reinstated and expanded.

Finally, favorable publicity from EPA and state agencies about generators who recycle their waste will do much to promote the beneficial reuse of hazardous waste. Those agencies could do much more to aid the development of the recycling and reclamation industry if they publicized the positive side of how the nation's hazardous waste management problems are being handled through reclamation and beneficial reuse. There is, after all, much more going on in the hazardous waste field than the

clean-up problems presented by mismanaged disposal sites such as Love Canal in Niagara Falls and the Valley of the Drums near Louisville.

SUMMARY

In summary, I believe that Cadence has developed a unique, sound technology for the recycling and reuse of hazardous wastes as Chem-Fuel. Beneficial reuse of waste is superior in every way to disposal at landfills or incineration. It is a technology that deserves encouragement through streamlined EPA procedures and financial incentives. The encouragement of recycling and reclamation will further the goals of the Resource Conservation and Recovery Act, will protect human health and the environment, will reduce waste disposal costs, and will conserve our dwindling energy resources.

Mr. SKELTON. Mr. Hiler?

Mr. HILER. Thank you, Mr. Chairman.

Mr. Reese, some weeks back, during August, you came and visited me and we talked about a specific problem that was possibly going to occur in the hazardous waste amendments act that actually is up yet this week.

I wonder if you would describe the nature of that problem, which I think you mentioned could be an obstacle to the effective use of hazardous waste as a resource as opposed to something you have to get rid of.

Mr. REESE. There is a considerable amount of emotion that exists with this subject.

Mr. SKELTON. We know.

Mr. REESE. Here we have technology, we have been utilizing it since 1979, and I pick up many papers and it indicates that this technology doesn't exist. Yet, we are converting these materials into beneficial products.

There seem to be many attempts to regulate or overregulate recycling. Of course, there have been good incinerators, bad incinerators, good recyclers, and bad recyclers. We suggest that EPA evaluate the technology; once they understand the technology and approve of it, give it a green light to move forward.

It seems like we constantly are asked to explain our technology. It slows us down. We have been meeting for the past several months with Federal EPA, with State EPA's, and regional EPA's. Our presentations are well received. They always say, "This information is interesting. You have changed our way of thinking. We need to get back with you as to how we are going to regulate you." Yet, we are regulated in accordance with RCRA.

Mr. HILER. I think you had mentioned at the time we had talked of a specific problem in the report language. That is what you might just touch on, because I think at the time, it certainly made me aware of some of the problems that there are to the effective use of hazardous waste as a resource.

Mr. REESE. The committee report on the Resource Conservation and Recovery Act Reauthorization in the House talks of regulating all facilities possibly to incinerator standards. We encourage the EPA to investigate each technology. A blast furnace operates differently than a cement kiln. That technology is different than a boiler. That technology is different than an incinerator. An incinerator is destruction. The other three are recovery, recycling, and conservation activities.

We would encourage that each combustion device should be evaluated as to its destruction efficiency, its removal efficiency, and then only be regulated as necessary and appropriate. Let's eliminate the hysteria and emotion that technology doesn't exist. It does exist, and we possess it right here in the United States. We should recognize those who have the technology and let's move forward with it.

Mr. HILER. Thank you.

Mr. Chairman, I yield back.

Mr. SKELTON. Thank you.

What guidance, if any, did you receive from the EPA or the other official agencies in obtaining permission to market Chem-Fuel and the process of making it?

Mr. REESE. In the beginning we received no guidance. It is just my strong background and recognizing that it was necessary to have a good, proper——

Mr. SKELTON. Could you have used technical assistance from them?

Mr. REESE. We could have used—we did receive—a recycling investment tax credit. That was an additional investment tax credit. I believe it existed in 1979. It was kind of a sweetener to the firms that we wanted to market our Chem-Fuel to.

Even though industry wouldn't go into business just because of the tax credit, they said, "Well, our Government wants us to use recycled products and supplemental fuels and is willing to give an additional 10 percent incentive. It is a clear message to us that they want recycling to occur, so let's spend some time and work with you on utilizing your recycled material in our process." I think this is a good way to encourage its use.

Another comment I failed to stress earlier, Chem-Fuel is recognized as a product by existing EPA regulations. However, EPA is proposing to call it a hazardous waste. Once again, we are going to associate a lot of emotion if today we are sending in a product and tomorrow it is a hazardous waste. Paint materials are hazardous because they are flammable. By the same standards our product is hazardous because it is flammable. If we start calling it a hazardous waste, we will then have to go through many more explanations, many more meetings and try to solve the emotional problem.

Mr. SKELTON. Let me ask you a technical question. Is it correct that as long as the final mixture of Chem-Fuel contains at least 10,500 Btu's per pound and chlorides of 1 to 5 percent by weight, any flammable hazardous waste can be mixed into Chem-Fuel, or do you automatically not accept certain wastes for use in Chem-Fuel?

Mr. REESE. We can safely consume approximately 80 to 90 percent of the materials that are generated in this country by putting them together, high Btu's with low Btu materials. We determined the minimum specification for Btu's that works in the ironmaking blast furnace industry. A wide variety of materials can be beneficially mixed into Chem-Fuel.

As I mentioned, we can consume in our process, can utilize in our process very large volumes. We feel that it should not be regulated as to the Btu content or the chloride content. We are self-reg-

ulated in that our materials must be shipped out on a timely basis and therefore not over accumulate.

We are turning over these tanks several times per month, large volumes moving out. We are not accumulating large volumes of inventory at our sites but turning this material over into product.

Therefore, we feel that the specs of our fuel should be considered and we should not be heavily regulated as to the types of material, the energy products, whether it is a low Btu or high Btu that goes into our fuel. Obviously we can accept only so much low Btu material to be put together with the high Btu material, and meet the specifications.

Mr. SKELTON. Thank you so much for being with us. Mr. Hiler and I appreciate it.

Mr. REESE. Thank you for your time.

Mr. SKELTON. Louis Flax, is next. He is the president of Lopat Enterprises, Inc., of Asbury, New Jersey.

As stated before, Mr. Flax, your testimony will be inserted in the record in full. If you would like to summarize, we would appreciate it.

TESTIMONY OF LOUIS FLAX, PRESIDENT, LOPAT ENTERPRISES, INC.

Mr. FLAX. Mr. Chairman and members of the committee, we are a small business with an innovation for hazardous waste management. We believe we have an affordable, safe technology for the treatment and encapsulation of PCB.

This product was developed by Lopat Enterprises in 1982 and in 1983 was tested by the U.S. Testing Laboratories of Hoboken, N.J., an independent laboratory. Several samples were contaminated with pure PCB, Arcolor 1242, and then treated with K-20.

There was no detection of the PCB 24 hours after the treatment of the samples with the chemical. These samples were retained by the laboratory and tested over a period of 203 days with no leaching of the PCB through the chemical. To our knowledge, there is no other chemical, epoxy, or sealant that has ever been able to hold PCB for that length of time.

We started at EPA Region II to advise them of what we were doing, actually. Region II told us to call Atlanta; Atlanta told us to call Washington; Washington told us to call Miami; Miami told us to call Texas; and Texas told us to call San Francisco.

Mr. SKELTON. You had a long-distance telephone bill that was out of sight, didn't you?

Mr. FLAX. I did, sir. It was up there.

Finally, I contacted the office of Representative Florio of New Jersey and an appointment was set up with Chris Harris. Chris looked at our test material, which the committee has in its possession. Chris said he didn't have the expertise to assess it and referred us to Mr. Hirschhorn of the Office of Technology Assessment.

Mr. SKELTON. Who will testify after you, by the way.

Mr. FLAX. Mr. Hirschhorn was impressed with it and set up a meeting with the Superfund office the following week, with Mr. Kleveno and Dr. Paul des Rosiers and 10 or 12 other people.

At that meeting, they told me that they wouldn't entertain our technology until they were sure that it was safe because so many other solutions had caused so many other problems. We made a disclosure a week later. The chemical is, in fact, nontoxic, nonvolatile, noncorrosive, inorganic. It is perfectly safe.

Dr. des Rosiers wrote a 12-page protocol for the testing of the material, which was sent to the Sample Management Office in Virginia. Unfortunately, there were no funds to test it, so it laid there. In the meantime, on behalf of the company I tried to get some soil to test because our treatment of concrete was proving to be very, very effective.

I went out to Times Beach, took a look at it, met with the waste management people in Jefferson City and was promised samples of soil to be sent to the laboratory because they were in the process of putting together 30 or 50 samples for people interested in developing the technology. When the samples didn't arrive at our lab, I called them, and they told me, "We don't know you, so just forget it. Don't call us anymore." They hung up on me.

I got a call from Region II of EPA a little over a month ago, and the gentleman who I had been speaking to said, "Lou, I just got a call from headquarters about you."

He said, "From now on, if it ain't in writing, it don't count." I said, "What are you talking about?"

He said, "There isn't anyone you haven't called about the formula, and they were tired of it."

I said, "Well, I really don't care. I will continue to call these people, and if I can find somebody I haven't spoken to, I will call them, too, because I am not going to let this thing die."

He said, "Well, you need a license."

I said, "Now you tell me. After 6 months you tell me I need a license. How do I get it?"

He said, "Well, we will send you some forms."

I called Washington and spoke to someone there, and they said, "OK; we will send you forms." They sent me forms for incineration. My process is not incineration; it is a chemical mixture.

I bought the guidelines down here and spoke to Mr. Hirschhorn abound it. He called the party, and the party said, "Well, we don't have a protocol for this man. Let him write his own." I could have done that in the beginning.

Nevertheless, we have a lot of interest overseas on this product. Switzerland would like to work on it. So would Japan and England. We feel that the product belongs here. We feel that the technologies were developed here. We don't feel that it should be developed by foreigners and then brought back into this country to increase an already staggering balance of payments. We also feel that the product in soil is good enough to treat the soil and leave it in place to eliminate the high cost of incineration and removal.

I am not here to try to get Government money. Money is not our problem. Our problem is getting EPA to do some cheap lab work, to let the State agencies and the industry know that K-20 does, or does not work in certain toxic contamination situations.

That is my story, Mr. Chairman. Thank you very much for listening.

Mr. SKELTON. Thank you.

[Mr. Flax's prepared statement with attachments follows:]

PREPARED STATEMENT OF LOUIS FLAX, PRESIDENT, LOPAT ENTERPRISES, INC.

We are a small business with an innovation for hazardous waste management. We have a probable affordable and safe technology for the treatment and encapsulation of polychlorinated biphenyls, or PCB's, and possibly dioxin and other organic toxic chemicals. I would like to convey to this committee the multitude of problems and frustrations encountered by Lopat Enterprises Inc. in attempting to get meaningful response from the Environmental Protection Agency.

In January 1983, a formula developed by Lopat Enterprises Inc., known as K-20, was tested by the United States Testing Company of Hoboken, N.J. The test was conducted on various samples which had been contaminated by the laboratory with Arcolor 1242 [PCB]. The results of this test, dated January 4, 1983, a copy of which this committee has, showed that K-20 had safely encapsulated a known amount of PCB. These samples were retained by the laboratory for further testing in 30 days. We attempted to get in touch with EPA to advise them of what we were doing. Our initial contact was with Region 2 of EPA. After being switched from one extension to another, we were told that we were in the wrong office and told to call Atlanta, which we did. The result of the Atlanta call was the same. "You are in the wrong office. Why don't you call Miami?" So we did. Again the same result. "You are in the wrong office. Why don't you call Washington?" So we did. Washington told us that Texas was the place we should be talking to and gave us a number in Texas. Texas told us to call Region 9. When we asked where Region 9 was and were told San Francisco, we gave up and hung up.

We got the results from the laboratory on February 17, 1983, 36 days after the initial contamination of the samples, that showed K-20 was still holding the PCB. We contacted Rep. James Florio's office to try to get someone to listen to us. On April 15, 1983, we had a meeting with Mr. Chris Harris of Rep. Florio's office. Mr. Harris told us that he did not possess the expertise to assess the value of our test results and made an appointment the same day for us with Mr. Joel Hirschhorn, Project Director, Office of Technology Assessment for the Congress. He said it would be up to Mr. Hirschhorn to make a decision on whether to carry these results any further.

Mr. Hirschhorn was impressed with the test data and made an appointment with EPA Superfund Office for April 20, 1983. Among the 10 or more persons representing EPA at this meeting was Mr. Conrad Kleveno and Dr. J. Paul des Rosiers. At that time we were told that before EPA would even consider our proposed technology, a disclosure of the formula would have to be made to someone in the agency to assure them that its contents could not create another problem as many of the past solutions to problems have done. This disclosure was made at a meeting a week later and their fears were put to rest. K-20 is a non-toxic, non-volatile, inorganic, colorless and odorless formulation.

In this second meeting it was decided that a protocol would be written for a series of four tests with K-20. When the first draft of the proposed testing was completed, it was forwarded to the Sample Management Office in Alexandria, Virginia, to be publicized and bids taken. However, the area in which it was sent was out of funds and so nothing was done. It is our understanding that Superfund dollars are not readily available for Research and Development. Since that time another protocol has been written by Dr. des Rosiers, which this committee also has in its possession, dated July 15, 1983 and marked DRAFT. This too has been laying in a dormant position for the lack of funds.

In the time that elapsed from the second meeting Lopat continued to have the contaminated samples tested at its own expense. Each subsequent test proved that K-20 continued to contain the PCB. On August 4, 1983, 203 days after the initial contamination, the tests proved successful. We ordered the laboratory to pulverize the cinder block sample and the cement sample to ascertain what was happening to the PCB. This test, which you also have the results of in your possession, showed that only 33 percent of the PCB was recovered from the cinder block and only a little over 40 percent from the cement block. K-20 could possibly be dechlorinating the PCB. Only further testing will give us this answer. But to our knowledge, no other sealant or epoxy has even been able to contain PCB for this length of time.

Armed with these test results we continued to make call after call to several areas of EPA to attempt to get soil tests run on PCB or dioxin contaminated soils to further prove or disprove the effectiveness of K-20. Efforts to get these tests run were to no avail. In April, 1983, Lopat was promised a sample of contaminated soil from Times Beach, Mo., by the Waste Management Program in Jefferson City, Mo.

When it did not arrive as promised at our independent laboratory, we called to find out what happened. We were told "Nobody knows you. Just forget it." Yet we were told when the request was made for the samples that samples would be made available to anyone interested in developing a technology to work on soil. We asked for soil from other agencies to test at our own expense in a recognized laboratory but were refused because we didn't have a license. When we asked for the license we were refused. We were also told that even if we did run the tests on our own that they wouldn't be valid unless the government ran parallel tests with us and they didn't have funds for it.

The amount of money indicated on the protocol for the soil tests is approximately $4,000. We offered to borrow the money to pay for both sets of tests if only EPA would do it but they refused. We feel strongly that we may have the answer to containing or cleaning PCB and/or dioxin in soil and leaving it in place as opposed to the large sums of money needed to incinerate or remove soil to a dumping site. This is another plus that makes K-20 the possible affordable and safe technology that is so needed by our nation.

We continued to call members of the Congress with the hope that they would use their good offices to get these tests in the protocol run. Evidently someone in EPA took exception to this phone campaign, so in September I received a call from Region 2 of EPA. I was told: "Lou, I just received a call from headquarters about you. There isn't anyone you haven't called about your formula. So from now on, if it ain't in writing, it don't count." I told the party that I would continue to make phone calls to anyone and everyone I have spoken to up to this point and if I could find someone I hadn't spoken to who I thought could help, I would call them too. When I asked the EPA official what had to be in writing, he said an application for a license. I then called Washington and was told that they would send me the necessary guidelines to enable us to file requests for a license and a demonstration. EPA has always been aware of what our technology consists of but they sent me Guidelines for PCB Destruction Permit Applications and Demonstration Test Plans that governed incineration technology. Confused by this, I went to Washington and spoke with Mr. Hirschhorn who called the person responsible for sending the literature. He told Mr. Hirschhorn that he was at a loss as to what to do because there were no regulations governing our type of technology and to possibly consider writing our own protocol.

How many small companies have fallen by the wayside because of government agencies and regulations being completely inflexible to the needs of the inventor? How many inventions and technologies have gone to foreign governments because of their open-mindedness and willingness to help commercialize an idea?

Lopat has interest from Switzerland, England and Japan for this technology, K-20. We at Lopat refuse to let this idea die on the vine. This technology, should it prove out in testing, belongs in this country, not overseas. If it were perfected by foreigners it would force this country to buy it and increase an already staggering balance of payment deficit instead of lowering it by selling an innovation to them to solve their problems of toxic contamination.

I am often asked, "Why don't you sell out, if K-20 is so good, or get venture capital to develop K-20?" Mr. Chairman, eventually I may go public and get all the money I need, but now the problem is the government. I need EPA to verify that K-20 works for several toxic contamination and hazardous waste problems. I am not looking for government money. We have already invested much of our own money. What we need now is some immediate, relatively cheap lab work by EPA to assure industry and state governments that EPA finds K-20 effective. It hurts me to think that if Lopat was a big corporation, instead of just a small business, I wouldn't be in such a frustrating situation here today.

Thank you, Mr. Chairman, for the opportunity to tell my story.

PROPOSED EXPERIMENTAL PROTOCOL FOR TESTS OF THE EFFICACY OF THE K-20 COATING MATERIAL ON CONTROL OF 2,3,7,8-TCDD IN CONTAMINATED SAMPLES

Prepared by

U.S. ENVIRONMENTAL PROTECTION AGENCY

OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE

AND

OFFICE OF RESEARCH AND DEVELOPMENT

DRAFT

Submitted to

U.S. ENVIRONMENTAL PROTECTION AGENCY
SAMPLE MANAGEMENT OFFICE
VIAR & COMPANY
ALEXANDRIA, VIRGINIA 22313

JULY 15, 1983

I. SCOPE OF PROTOCOL

The U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response and Office of Research and Development, plans to conduct a series of tests, in conjunction with a contractor to be selected, to evaluate the capabilities of a previously developed coating/sealing material, K-20, for control of 2,3,7,8-TCDD present as a contaminant in certain environmental samples. The proposed tests will be conducted at the laboratory of the selected contractor and the environmental samples to be tested will be representative samples collected from TCDD-contaminated horse arenas or related sites located in the State of Missouri, PCB-containing transformer oils, and soot and products of combustion from PCB transformer fires (including contaminated construction materials). The samples to be tested will be provided by EPA. The experimental protocol presented herein describes the procedures which will be employed in (1) preparing samples, (2) treating these with the K-20 material, (3) analyzing the samples (before and following treatment) to determine the concentrations of 2,3,7,8-TCDD or PCBs contained therein, (4) analyzing a few of the samples to identify other chemical compounds which are present, especially other chlorinated hydrocarbons, including other chlorodibenzo-p-dioxins (CDDs) and/or chlorodibenzofurans (CDFs), and (5) providing quality assurance for the analyses.

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II. PREPARATION OF SAMPLES FOR TREATMENT

A. Effectiveness of K-20 Treatment of TCDD-Contaminated Soil (Task 1)

One bulk batch of soil, consisting of ten (10) kilograms of soil from a representative Missouri site, will be collected by EPA/Region VII and provided to the contractor for use in the tests. Upon receipt, these samples will be prepared by the contractor according to the procedures described below.

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1. Homogenization of Bulk Soil Samples

Upon receipt of the soil sample, the 10 kilogram portion will be separately transferred to a glove-box where the soil batch will be screened, using a 4mm mesh-size sieve, to remove stones and other foreign matter. The sieved soil will then be stirred vigorously (in smaller batches, which will be recombined) to homogenize each batch. Portions of each of these homogeneous bulk samples will then be used for the TCDD treatment tests.

2. Preparation of Soil Test Vessels and Treatment With K-20

Aliquots of the soil to be tested will be removed from the homogenized batches and transferred to appropriate containers. The containers or pans utilized will yield soil test vessels in which the depth of soil is approximately three inches. Eighteen of these vessels will be prepared and clearly labelled with identifying information. Some of the soil aliquots will be treated with the K-20 and some, which will not be treated, will serve as control samples. The sample vessels will be covered loosely with aluminum foil, to prevent any cross-contamination, and placed in a closed self-contained hood, which is designed for handling toxic materials, and which uses a fully carbon-filtered air supply (both intake and exhaust air). The sample vessels will be kept in these hoods throughout the duration of the tests.

Lopat Enterprises, Inc. will supply the K-20 materials and scientists from the contractor will prepare an appropriate quantity of the K-20 material and will use this to treat the soil samples at the contractor's test site. This will be accomplished by carefully spraying a known predetermined amount of K-20 material into each of the pans containing

soil to be tested. The pans will be weighed accurately by the contractor personnel at three different points in the tests: a) at the time when the soils are placed in the vessels, b) immediately following addition of the K-20 (for those pans that are treated), and c) just prior to analysis of the soil in each pan. This is necessary in order to take into account the possible loss of water from the soil samples that may occur during the tests. Following addition of the K-20 material to those pans in which the coating/sealing efficiency is to be tested, the vessels will immediately be covered with foil and placed in the hoods. The vessels will be maintained at ambient or room temperature throughout the tests.

The quantity of K-20 material to be added to the test soil will be determined on the basis of recommendations of the supplier, Lopat Enterprises, Inc. and will be based, in part, on the total organic chlorine (TOCl) content of the soil batch. The procedure for this determination is described in the section on analytical methods. In the preliminary analyses of the soil, the water content in the batch will also be determined, using procedures described in a later section.

At appropriate time intervals following treatment of the soil with K-20 material, as shown in the attached Table 1, portions of the pans containing the treated and control soils will be removed from the hood, and aliquots and/or hexane wipe patches of the soil will be removed and analyzed for 2,3,7,8-TCDD. The time intervals shown in Table 1 may be adjusted somewhat, depending upon the observed rate of coating/sealing of TCDD.

Estimated Cost: $4,000

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Table 1

Task 1: Experiments to Determine the Efficacy of K-20 for the Treatment of 2,3,7,8-TCDD in Contaminated Soils.

Number of Hours Following Treatment Before Analysis	Soil Sample# Number of Samples	
	Untreated (Controls)	K-20 Treated
0	3#, 3*	-
6	-	3*
18	-	3*
30	3*	3*
TOTAL NUMBER OF SAMPLES:	18	

Soil concentration (ug 2,3,7,8-TCDD/kg soil sample)
* Hexane wipe samples (ug 2,3,7,8-TCDD/100 cm^2 surface)

Table 2

Task 2: Experiments to Determine Effects of K-20 on Neat Solutions of PCBs.

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PCB Concentration (%)	Time After Application, hours (Number of Samples*) 0	6	18	30
0 (control)	3	-	-	3
0.01	3	3	3	3
0.5	3	3	3	3
1	3	3	3	3
10	3	3	3	3
100	3	3	3	3
TOTAL NUMBER OF SAMPLES:	66			

* PCB Concentrations expressed in ug/kg.

Table 3

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Task 3: Penetration/Coating Effects# of K-20 Upon Construction/Building Materials.

Construction/ Building Material	Number of Samples¢ PCB Treated *			
	0	500ppm	5,000ppm	50,000ppm
Wood	3	3	3	3
Concrete	3	3	3	3
Brick	3	3	3	3
Painted Wall Board	3	3	3	3
Painted Wood (latex)	3	3	3	3
Aluminum	3	3	3	3
Steel	3	3	3	3
Acrylic	3	3	3	3
Vinyl	3	3	3	3
Ceramic Tile	3	3	3	3
Painted Concrete	3	3	3	3
Cinder Block	3	3	3	3
	36	36	36	36

TOTAL NUMBER OF SAMPLES: 144 x 4 = 576

Controlled penetration study of K-20 on untreated materials determined using a x-shaped grid.

* Hexane wipe samples, concentrations expressed as ug PCBs/100 cm^2 surface area.

Samples taken at time = 0, 3, 30, 90 days after application of K-20.

¢ If any positive PCBs, quantify PCDFs in ug/100 cm^2.

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Table 4

Task 4: Effects of K-20 on Soot Produced as a Result of a PCB-Transformer Fire.

Number of Hours Following Treatment Before Analysis	Sooty Surface Samples Number of Samples Untreated (Controls)	K-20 Treated
0	3#, 3*	-
6	-	3*
18	-	3*
30	-	3*
72	3*	3*

TOTAL NUMBER OF SAMPLES: 21

Soot concentrations: PCBs, PCDDs, PCDFs in ug/kg soot.

* Hexane wipe samples: PCBs, PCDDs, PCDFs in ug/100 cm^2 surface.

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B. Effects of K-20 in Neat Solutions of PCBs (Task 2)

The purpose of this experiment is to ascertain whether the K-20 material can effect any measurable decrease in PCB concentration in so-called "neat" solutions (i.e., analytical grade PCBs dissolved in a non-reactive solvent such as a chlorobenzene).

PCB stock solutions will be diluted to concentrations shown in Table 2. 50-ml aliquots of the prepared PCB solutions (0, 0.01, 0.5, 1, 10, and 100%) will be added to 150 ml beakers and a quantity of K-20 material added as prescribed by Lopat Enterprises, Inc. Sample aliquots will be removed according to the time schedule delineated in Table 2. PCB analyses will be conducted according to:

Methods for Organic Chemical Analyses of Municipal and Industrial Wastewaters - Organochlorine Pesticides and PCB's - Method 608, U.S. EPA, Cincinnati, OH, July '82.

Supplemented with "Improved Method for Polychlorinated Biphenyl Determination in Complex Matrices", ES&T, Vol. 16, No. 2, 1982, pp 121-125.

Estimated Cost: $2000.

C. Penetration/Coating Effects of K-20 Upon Clean and PCB Contaminated Construction/Building Materials (Task 3)

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The purpose of this task in twofold: (1) to evaluate the penetration/coating effects of K-20 on 12 different construction/building materials as shown in Table 3 and (2) to evaluate the sealing potential of K-20 on similar construction/building materials contaminated with varying concentrations of PCBs.

In the first experiments, the penetrability of K-20 relative to 12 materials of construction will be determined using accepted ASTM methods. For purposes of cost estimation, it is assured that five samples/tests will be made on 12 materials of construction shown in Table 3 or 60 penetration tests. Statistical analysis of the results will be reported.

In the second phase of study, the same materials of construction will be exposed, in a mannaer according to ASTM methods, to varying concentrations of a PCB analytical standard at 0, 500, 5000, and 50000 ppm. Three hexane wipe samples will be taken of each of the exposed materials at times = 0, 3, 30, and 90 days after application of the K-20 materials. Therefore, the total number of wipe samples taken for analysis is calculated as (36 + 36 + 36 + 36) or 144 x 4 or 576. Should any wipe sample exhibit detectable PCB concentration (detection limit for PCBs will be 0.025 ug/cm^2), then TCDFs (furans) will be quantified.

Furthermore, in addition to the previous tests described above, each material of construction exposed to 5,000 ppm PCBs and treated with K-20 for 30 days will have the following characteristics evaluated according to accepted ASTM methods:

(a) Penetration of contamination and coating

(b) Adhesion of coating

(c) Water resistance of coating

(d) Wash-off of coating potential

(e) Impact resistance of coating

(f) Weathering of coating

(g) Scratch resistance of coating

(h) Hardness of coating

(i) Acid/base resistance of coating

(j) Humidity resistance of coating

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Estimated Costs: $30,000

D. Effects of K-20 on Soot Produced as a Result of a PCB-Transformer Fire (Task 4)

The purpose of this experiment is to verify the capabilities of K-20 as a practicable sealant for soot contaminated with PCBs, PCDDs (dioxins), and PCDFs, which may result from transformer fires in public buildings.

Samples of PCB contaminated building materials from an actual PCB transformer fire will be made available to the contractor by EPA in cooperation with NIOSH. Table 4 details the experimental design to be employed in the study. Since this soot can be highly contaminated with PCBs and PCDFs, at a minimum, stringent safety protocols shall be adhered to.

Estimated Cost: $24,000

III. ANALYTICAL PROCEDURES

The analytical procedures that will be used in this study are outlined in the attached EPA approved protocol: "Determination of 2,3,7,8-TCDD in Soil and Sediment."

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A. Quality Assurance

Quality assurance for the analyses is provided principally by the use of an isotopically labelled internal standard (either $^{37}Cl_4$-2,3, 7,8-TCDD or $^{13}C_{12}$-2,3,7,8-TCDD) which is added in known quality to each sample prior to extraction and analysis. This labelled TCDD is quantitatively measured simultaneously with the native TCDD in the sample and the percent recovery of the labelled TCDD serves as an indicator of the efficacy of the methodology and of each particular analysis. The minimum acceptable recovery of the labelled TCDD is 25%. Procedural blank samples are also analyzed routinely (typically one blank for each 10-20 analyses) along with the actual samples. In the present study, each sample type (corresponding to a given treatment experiment) will be analyzed in triplicate (see Table 1) to ensure reliable results.

B. Determination of Other CDDs and CDFs

The extraction and cleanup procedures applied to screen samples for the entire series of CDDs and CDFs (mono- through octachlorinated) are quite similar to those already described in the analytical method for TCDD. In this case, however, additional internal standards are added, including $^{37}Cl_4$-Hepta CDD and $^{37}Cl_8$-OCDD. A slightly different liquid chromatography elution procedure is also applied to obtain all CDDs and CDFs in a single extract.

C. Determination of Total Organic Chlorine

Total organic chlorine (TOCl) in the prescribed samples will be determined by using a method provided in the EPA manual of Chemical mehtods for Pesticides. A copy of this proceedure is attached.

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United States Testing Company, Inc.
Chemical Services Division
1415 PARK AVENUE • HOBOKEN, NEW JERSEY 07030 • 201-792-2400

REPORT OF TEST

January 4, 1983

CLIENT: Lopat
640 Mattison Avenue
Asbury Park, NJ 07712
Attention: Mr. Lincoln R. Davis

NUMBER 67046 - 1

SUBJECT: Samples were supplied by the client and identified as tile, cement block and cinder block. A special coating was also supplied.

AUTHORIZATION:

To determine if the special coating when applied to the samples covers the presence of Aroclor PCB's.

PROCEDURE:

A known amount of Aroclor 1242 PCB was added to the cement block and the cinder block in a measured area of 1 x 1 centimeters. Half of the tile sample was also treated with Aroclor 1242. After 72 hours the special coating was applied to the samples by the client. The coating was then reapplied 24 hours later. After an additional 24 hours (drying time) the samples were then wiped with a 7 cm analytical filter paper that was previously wet with hexane. The wipes were then extracted in a known amount of hexane and aliquots were then injected into a gas chromatograph equipped with an electron capture detector.

The following are the chromatographic conditions used:

Column: 10' x 1/4" 1.5% OV-17/1.95% QF-1 on 80/100 WHP
Column Temperature: 200°C
Electron Capture Detector Temperature: 250°C
Injection Port Temperature: 250°C

A standard of Arochlor 1242 was also injected into the chromatograph for reference purposes.

* * *

SIGNED FOR THE COMPANY

BY William S. Gilman

Laboratories in: New York • Chicago • Los Angeles • Tulsa • Memphis • Philadelphia • Richland

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Form 883

United States Testing Company, Inc.

CLIENT: Lopat

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RESULTS:

Aroclor 1242 was not detected in any of the extracts.

The detection limit for Aroclor 1242 is <0.03 $\mu g/cm^2$.

The samples are being retained by United States Testing and will be re-evaluated in one month.

United States Testing Company, Inc.
Chemical Services Division
1415 PARK AVENUE • HOBOKEN, NEW JERSEY 07030 • 201-792-2400

REPORT OF TEST

February 7, 1983

NUMBER

CLIENT: Lopat Enterprise, Inc.
640 Mattison Avenue
Asbury Park, NJ 07712
Attention: Mr. Lincoln Davis

47129

SUBJECT: One (1) set of coated masonry surfaces submitted and identified by the client as:

Sealer on concrete bricks, patio blocks and marble.

AUTHORIZATION:

Client's verbal of January 17, 1983.

PURPOSE:

To determine the resistance of the coating to wind driven rain, salt fog, acid rain and efflorescence.

PROCEDURES:

Wind driven rain resistance was determined using the Wind Driven Rain Apparatus of Federal Specification TT-C-555C. Coated green and black patio blocks were mounted on the apparatus and subjected to water spray and 5' of air pressure to force the simulated wind driven rain into and through the blocks. The time withstood before water penetration through the blocks was determined and the weight of water gain by the blocks measured.

Salt fog resistance was determined by placing a coated concrete brick in a 5% salt fog cabinet maintained in accordance with ASTM B-117. After 14 days exposure, the brick was visually examined for change. It was also broken open with a hammer to observe penetration.

Acid rain resistance was determined by exposing a coated piece of red marble in a Kesternich unit. The unit was charged with 2 liters each of water, carbon dioxide and sulfur dioxide. After 8 hours in this environment at 38°C and airing overnight in the opened unit, the coating was examined for change.

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BY

William S. Gilman

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United States Testing Company, Inc.

CLIENT: Lopat Enterprise, Inc.

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Efflorescence resistance was determined using the method of Federal Specification SS-W-110C. A coated cement brick and an uncoated control were placed in 1/2" of sodium sulfate solution (5%) and the amount of efflorescence formed on their surfaces were reported.

RESULTS:

Wind Driven Rain Resistance

After 4 hours exposure on the wind driven rain apparatus, the black coated block exhibited water leaking through its backside and had gained 78 grams of water pickup. Most of its coating appeared to have washed off except for some that was white.

After 5 hours, water leaked through the back of the green patio block. Most of its coating had turned white and was friable. It had gained 77 grams.

Salt Fog Resistance

The coating on the brick appeared to be gone after 14 days of exposure. Considerable penetration appeared to be seen on breaking the brick in two.

Acid Rain Resistance

After 1 cycle in the Kesternich unit, the coating on the marble had all turned into a powdery white material. The material was readily washed off the surface of the marble with a wet soft cloth.

Efflorescence Resistance

The coated brick exhibited no efflorescence on its coated upper surface. On its uncoated sides it showed considerable efflorescence, which was to be expected. The uncoated control brickexhibited considerable efflorescence on its sides and about 1" onto its upper surface.

United States Testing Company, Inc.
Chemical Services Division
1415 PARK AVENUE • HOBOKEN, NEW JERSEY 07030 • 201-792-2400

REPORT OF TEST

February 17, 1983

CLIENT: Lopat
640 Mattison Avenue
Asbury Park, NJ 07712
Attention: Mr. Lincoln R. Davis

NUMBER
67046-2

SUBJECT: Samples were supplied by the client and identified as tile, cement block and cinder block. A special coating was also supplied.

AUTHORIZATION:

Client's letter dated December 22, 1982.

PURPOSE:

To determine if the special coating when applied to the samples covers the presence of Aroclor PCB's.

PROCEDURE:

A known amount of Aroclor 1242 PCB was added to the cement block and the cinder block in a measured area of 1 x 1 centimeters. Half of the tile sample was also treated with Aroclor 1242. After 72 hours, the special coating was applied to the samples by the client. The coating was then reapplied 24 hours later. After 36 days, the samples were wiped with a 7 cm analytical filter paper that was previously wet with hexane. The wipes were then extracted in a known amount of hexane and aliquots were then injected into a gas chromatograph equipped with an electron capture detector.

The following are the chromatographic conditions used:

Column: 10' x 1/4" 1.5% OV-17/1.95% QF-1 on 80/100 WHP
Column Temperature: 200°C
Electron Capture Detector Temperature: 250°C
Electron Capture Detector Temperature: 250°C
Injection Port Temperature: 250°C

A standard of Aroclor 1242 was also injected into the chromatograph for reference purposes.

* * *

SIGNED FOR THE COMPANY
BY

William S. Gilman

Laboratories in: New York • Chicago • Los Angeles • Tulsa • Memphis • Philadelphia • Richland

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United States Testing Company, Inc.

CLIENT: Lupat

Number
67(;6-:

RESULTS:

Aroclor 1242 was not detected in any of the extracts.

The detection limit for Aroclor 1242 is <25,000 pica grams/cm^2.

United States Testing Company, Inc.
Chemical Services Division
1415 PARK AVENUE • HOBOKEN, NEW JERSEY 07030 • 201-792-2400

REPORT OF TEST

May 31, 1983

CLIENT: Lopat Enterprises, Inc.
640 Mattison Avenue
Asbury Park, NJ 07712
Attention: Mr. Lincoln R. Davis

NUMBER 67619

SUBJECT: One sample submitted and identified by the client as: One system of K-20 consisting of two small cans, the ingredients of which were mixed on a one to one (1 : 1) volume basis.

AUTHORIZATION:

In person May 17, 1983.

PURPOSE:

Determination of fire retardancy of the system per ASTM D-1360.

PROCEDURE:

Fire retardancy of Paints (Cabinet Method) - ASTM D-1360.

Test panels were coated with one brush coat of the reacted system equal to 200 ft² per gallon.

Panels were allowed to air dry at room temperature for 48 hours until completely dry.

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BY
William S. Gilman

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United States Testing Company, Inc.

CLIENT: Lopat Enterprises, Inc.

Number
67619

RESULTS:

Panel No.	Weight (initial)	Weight (final)	Weight Loss
1	202.59 gms.	188.55 gms.	14.04 gms.
2	203.69 "	192.36 "	11.33 "
3	137.90 "	124.78 "	13.12 "
4	126.13 "	116.18 "	9.95 "
5	184.26 "	169.96 "	14.30 "
		Total	62.74 "
			5

Average Loss = 12.55 gms.

Panel No.	Dimensions of Char, in.	Char Vol. $in.^3$
1	10.25 x 4.25 x .25	10.89
2	9.5 x 4.25 x .25	10.09
3	10.0 x 4.75 x .25	11.88
4	10.25 x 4.25 x .25	10.89
5	10.375x 4.25 x .25	11.02
	Total	54.77
		5
	Char Volume Avg. $in.^3$ =	10.95
	Char Volume Avg. cc =	179.48

COMMENTS:

This system exhibits flame retarding properties as indicated by the test results obtained.

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REPORT OF TEST

June 13, 1983

CLIENT: Lapat
640 Mattison Avenue
Asbury Park, NJ 07712
Attention: Mr. Lincoln Davis

NUMBER 67678

SUBJECT: Special coating supplied by the client on PCB contaminated substrates.

AUTHORIZATION:

Client's verbal of June 2, 1983.

PURPOSE:

Aroclor PCB's after ageing.

PROCEDURE:

A known amount of Aroclor 1242 PCB was added to the cement block and the cinder block in a measured area of 1 x 1 centimeters. Half of the tile sample was also treated with Aroclor 1242. After 72 hours the special coating was applied to the samples by the client. The coating was then reapplied 24 hours later.

After 151 days the samples were wiped with a 7 cm analytical filter paper that was previously wet with hexane. The wipes were then extracted in a known amount of hexane and aliquots were then injected into a gas chromatograph equipped with an electron capture detector.

A standard of Arochlor 1242 was also injected into the chromatograph for reference purposes.

RESULTS:

Aroclor 1242 was not detected in any of the extracts.

The detection limit for Aroclor 1242 is <80,000 pica grams/cm^2.

• • •

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William S. Gilman

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Form: 883

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REPORT OF TEST

August 4, 1983

CLIENT: Lopat Enterprises, Inc.
640 Mattison Avenue
Asbury Park, NJ 07712
Attention: Mr. Lincoln Davis

NUMBER 67890

SUBJECT: Special coating supplied by the client on Arocior PCB contaminated substrates.

AUTHORIZATION:

Client's verbal of August 1, 1983.

PURPOSE:

Arocior PCB's after ageing.

PROCEDURE:

A known amount of Arocior 1242 PCB was added to the cement block and the cinder block in a measured area of 1 x 1 centimeters. Half of the tile sample was also treated with Arocior 1242. After 72 hours, the special coating was applied to the samples by the client. The coating was then reapplied 24 hours later. After 36 days, the samples were wiped with a 7 cm analytical filter paper that was previously wet with hexane. The wipes were then extracted in a known amount of hexane and aliquots were then injected into a gas chromatograph equipped with an electron capture detector.

The following are the chromatographic conditions used:

Column: 10' x 1/4" 1.5% OV-17/1.95% QF-1 on 80/100 WHP
Column Temperature: 200°C
Electron Capture Detector Temperature: 250°C
Injection Port Temperature: 250°C

A standard of Arocior 1242 was also injected into the chromatograph for reference purposes.

* * *

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Form 663

United States Testing Company, Inc.

CLIENT: Lopat Enterprises, Inc. Number 67890

After 203 days the samples were wiped with a 7 cm analytical filter paper that was previously wet with hexane. The wipes were then extracted in a known amount of hexane and aliquots were then injected into a gas chromatograph equipped with an electron capture detector.

RESULTS:

Aroclor 1242 was not detected in any of the extracts.

The detection limit for Aroclor 1242 is less than 59,000 pica grams/cm^2.

* * *

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Chemical Division

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failure analysis

August 19, 1983

Mr. Lincoln Davis
Lopat
640 Mattison
Asbury Park, NJ 07712

Dear Linc,

We have conducted an additional test on the chlordane evaluation on the cinder block to supplement our Report No. 67885.

The cinder block, as you recall, was re-coated with your coating two additional times. The intervals between these latter coatings was 24 hours, as you suggested. The cinder block was then re-wiped with saturated hexane, as conducted before, and the pad was extracted in order to run a GC analysis.

What we then found was 184.3 micrograms/ml of chloradane on that wipe. This, as compared to our previous reading of 1,148.9 on the cinder block initially coated, appears that we are decreasing the count considerably. However, the overall efficiency still has to be explored in order to get a most efficient system.

In the meantime, if I can be of any further assistance, please contact me.

Very truly yours,

UNITED STATES TESTING COMPANY, INC.

W.S. Gilman

William S. Gilman
Vice President

WSG:hg

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REPORT OF TEST

August 23, 1983

CLIENT: Lopat Enterprises Inc.
640 Mattison Avenue
Asbury Park, NJ 07712
Attention: Mr. Lincoln Davis

NUMBER 67915

SUBJECT: Special coating supplied by the client identified as K-20.

AUTHORIZATION:

Client's verbal of August 8, 1983.

PURPOSE:

Aroclor PCB characterization study on contaminated cement block and cinder block which was initially spiked with 100 µg/ml of Aroclor 1242.

PROCEDURE:

The samples identified as cement block and cinder block, which had been analyzed previously over a period of eight months, were crushed. The total sample was extracted in a known volume of hexane. The extract was then concentrated to a working volume. Aliquots of each extract were then injected into a gas chromatograph equipped with an electron capture detector.

Aliquots of Aroclor 1242 standard were also injected into the chromatograph, under identical conditions, for reference purposes.

RESULTS:

	Aroclor 1242
Cement Block	46.63 µg/ml
Cinder Block	34.11 µg/ml

COMMENTS:

The Aroclor recovered may indicate incomplete recovery or possible interactions of the K-20 with the Aroclor.

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William S. Gilman

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Form 865

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REPORT OF TEST

October 21, 1983

CLIENT: Lopat Enterprises, Inc.
640 Mattison Avenue
Asbury Park, NJ 07712
Attn: Mr. Linc Davis

NUMBER 68159-1

SUBJECT: One (1) sample of K-20 supplied by the client

AUTHORIZATION:

Client's verbal of September 29, 1983.

PURPOSE:

To determine the efficiency of the coating supplied by the client, in preventing chlordane exudation.

PROCEDURE:

A 19.05 centimeter x 9.00 centimeter cinder block surface was coated with a chlordane mixture. As requested by the client, the concentration of the mixture consisted of 1 oz. of chlordane per 1 gallon of water. Twenty-four hours later the special K-20 coating supplied by the client was applied to the surface of the block. A second coating was applied after twenty-four hours. The cinder block surface was then wiped with a 7 centimeter filter pad, saturated with hexane. The filter pad was then extracted in 10 milliliters of hexane. Aliquots of the extract were then injected into a gas chromatograph equipped with an electron capture detector.

A second block was also analyzed in the same manner. This block measured 5 centimeters x 5 centimeters.

RESULTS:

Sample I.D.	µg/ml Chlordane
5 cm x 5 cm block	Not detected
19.05 cm 9.00 cm block	1.88 µg/ml

The detection limit of chlordane is < 1.00 µg/ml.

* * *

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Mr. SKELTON. Mr. Hiler.

Mr. HILER. Mr. Flax, do you have any recommendations for EPA on how they could better set up a procedure so that individuals like yourself could get that answer?

Mr. FLAX. Not per se, but I have said some things against EPA. Let me say one thing that happened on October 7. One of the people I have been speaking to in region II said, "Why don't you try to get hold of Charlie Rogers in EPA in Cincinnati? His office seems to have a lot of say as to what is tested and what is not tested."

We went out there. We met with Bill Kane; we went with Dr. Clay and Dr. Rogers. We sat there, and they looked at the results and they said, "OK; let's go do a soil test." It was that simple, something I had been breaking my head on for 9 months.

We went up into the lab. They took 500 milliliters of bentonite and contaminated it with PCB. We then added 20 milliliters of the chemical, and they allowed it to catalyze for 3 days. They called us and said that the bentonite had become so hard that they couldn't get it out of the beakers.

Bentonite is one of the products named for the lining of your landfills. If K-20 will have that kind of reaction to it, I think it will be a beautiful thing. As far as telling EPA what to do, I would just like to see somebody know what they are talking about when you call them, that's all, because they seem to be so bogged down with regulations that nobody can give you a clearcut answer on anything.

Mr. HILER. Would you say that your experience has been that EPA appears to be—and I want to make sure I use that word—less result-oriented and more in conformance with regulation-oriented?

Mr. FLAX. Definitely, yes.

Mr. HILER. Thank you.

I yield back, Mr. Chairman.

Mr. SKELTON. It sounds like what you are looking for is the opportunity to have your products fully tested by the EPA.

Mr. FLAX. Yes, sir.

Mr. SKELTON. Attached to your testimony, Mr. Flax, is a draft protocol for the EPA testing of K-20. Are you happy with this protocol, or would you like to change any part of it?

Mr. FLAX. No, sir, I am happy with it exactly as it is.

Mr. SKELTON. What applications do you foresee for your process? If it can encapsulate dioxins, could it be used in say a Times Beach situation?

Mr. FLAX. Yes, we believe it could. Again, pending the results of the chemical on soil, if it will in fact encapsulate dioxin in soil, it can be used in Times Beach by utilizing something on the order of a scarifier. I believe the contamination runs down to depths of 18 inches out there. You can reach that depth with no problem, treat the soil and leave it in place.

However, the chemical was used commercially for the first time 3 weeks ago on an unofficial recommendation by someone in EPA to IT Corp. IT Corp. was cleaning up the Pacific Gas and Electric Co. building in San Francisco that had an explosion in the transformer room.

Their levels were running 60 parts per million or better in that room. They jackhammered 8 inches of concrete off, they sandblasted 2 inches of concrete off the side walls and the ceiling and the room still read 60. They put K-20 on it and in 5 days the reading was down to .1, which is a very impressive result, sir.

Mr. SKELTON. Is it possible for you to give us a comparison of your costs or treatment as compared to the existing methods of treatment?

Mr. FLAX. I don't have any concept of what the existing costs are, Mr. Skelton. I do know that we are comparatively cheap. I don't have any idea of the amount of money that was spent on that transformer room prior to us coming in, but the cost was under $5,000.

Mr. SKELTON. You may want to stick around. We are going to have some gentlemen a little bit later from EPA testifying. I am going to ask them some questions I think you would want to ask them, were you sitting here with Mr. Hiler and me.

Thank you so much.

Now, we will hear from Joel Hirschhorn, of the Office of Technology Assessment.

Mr. Hirschhorn, you have heard us say you may offer your testimony in full, so please summarize it for us now.

TESTIMONY OF JOEL S. HIRSCHHORN, SENIOR ASSOCIATE, OFFICE OF TECHNOLOGY ASSESSMENT

Mr. HIRSCHHORN. Thank you, Mr. Chairman. I will make some summary statements here.

I want to note that these conclusions and observations result from several OTA studies already completed or in progress, as well as from our tracking for over 6 months the Lopat Corp.'s problems, which we are using as a case study with regard to introducing innovations in this area.

First, I would like to make the point that because the scope and magnitude of the Nation's hazardous waste problems are so large there really is a great need for affordable, innovative, and safe methods for treating hazardous waste and reducing their generation at the source.

Theoretically, we have often said and others have said that for every hazardous waste there is some alternative to land disposal as the only management tool. Now, small- or medium-sized firms that generate hazardous waste face some particular problems. These are both technical and economic problems. I won't go into a lot of detail, but I would say that a major problem for the smaller companies is what we would call technology and information transfer. There may be usable technologies out there. There is a problem of disseminating the correct information around the country. We don't have a formal program to do that, although a few States around the country are taking the initiative because we don't have it at the Federal level.

Another problem facing smaller firms is capital availabiiity. I think you have heard some indications of that earlier. That is a very real problem, to make investment, to do more waste treatment or source reduction.

Third, there are institutional problems in most of the country with regard to the collection of waste from smaller firms. Although we see a lot of progress here, this is still a problem.

I want to emphasize that the market prices for land disposal are now kept artifically low by some Government policies and regulations and that if this were not the case, then market forces could operate more effectively than they do now to encourage technological innovations for waste treatment and waste reduction.

In looking at this area we really have to look at the choices that people face, and land disposal is still the dominant form, dominant management option, because it costs the least.

The second major point I would like to make is that an area that is far less developed technologically and which also affects hazardous waste generators is the technology to clean up uncontrolled hazardous waste sites addressed by the Superfund program. These are very difficult situations around the country, as you well know.

Probably the No. 1 problem that we see without a good technical solution right now is the problem of large land mass areas where you have contamination by materials such as dioxin. Here we definitely have a major problem facing the Nation, which ultimately will cost small firms that generate hazardous wastes. In some way they are going to pay through taxes some of the bill of cleaning up these uncontrolled sites.

The third major point that I would like to make is that it is possible to look at hazardous waste management as a business opportunity for small- to medium-sized firms. I think this is very important. This hazardous waste management area is already a multibillion-dollar annual market which is likely to undergo considerable growth in the years ahead. The real problem here is not that the market isn't there but that there are problems and obstacles facing companies that attempt to enter this market.

There are few, if any, direct assistance programs offered by the Federal Government and existing Federal agencies, notably EPA, generally provide little readily available and easily understood information on what exists that could help smaller companies introduce technological innovations into this market area.

Most of these problems that we see facing smaller firms could be corrected by changes in the policies and administrative procedures at EPA. I want to again emphasize that no matter how good and useful a new idea is for dealing with a toxic waste problem, current regulatory policies and uncertainties, combined with the absence of direct support for innovations, overpower normal market forces and stand in the way of commercializing such innovations.

There are just a few other specifics with regard to what exists today.

EPA has not indicated a policy that recognizes a need and commitment to move away from land disposal. I would suggest that until that happens, the market will not operate in such a way so that people will want to, and economically be able to use the treatment alternatives to land disposal.

Also, we see a problem, a lack of cooperation among EPA's programs and a real problem in setting R&D priorities and implementing them effectively. Specifically, the Superfund effort does not appear to place any significant emphasis on development of in-

novative cleanup technologies, even though there is a clear need for them.

Finally, I will conclude by saying that while some Federal financial assistance and support may be effective in speeding the development and use of innovations, the most critical need now appears to be removing Government impediments to companies who want to enter this market.

Thank you.

Mr. SKELTON. Thank you.

[Mr. Hirschhorn's prepared statement follows:]

PREPARED STATEMENT OF JOEL S. HIRSCHHORN, SENIOR ASSOCIATE, OFFICE OF TECHNOLOGY ASSESSMENT

Mr. Chairman and committee members, my statement responds to your request for OTA's findings and observations regarding innovative technologies for hazardous waste management either developed by small businesses or useful to them. These conclusions and observations result from several OTA studies already completed or in progress, as well as from our following for over six months the progress of a small business, with a potentially important innovation, that is also testifying today.

First, I will summarize by saying that:

1. Because the scope and magnitude of the nation's hazardous waste problem are so large, there is great need for affordable, innovative, and safe methods for treating hazardous wastes and reducing their generation at the source. Such methods should be viewed as necessary alternatives to land disposal, which poses avoidable and unnecessary risks to human health and the environment. Although, theoretically, for every hazardous waste there is some alternative to land disposal as the only management tool, small- or medium-sized businesses that generate hazardous wastes may face technical and economic problems in using alternatives to land disposal. For these smaller firms, there are problems associated with technology and information transfer that stand in the way of adopting technically proven technologies more readily available to large corporations. Moreover, there may be capital availability difficulties for establishing waste treatment or waste reduction facilities. For much of the nation, there are institutional barriers to the collection of wastes from smaller waste generators, and collection often will be necessary for economical and effective waste management. Even though there are many options available for waste treatment and waste reduction, we are still at a relatively early stage in the development of such technologies. Market prices for land disposal are now kept artificially low by some government policies and regulations; if this were not the case, then market forces could operate more effectively than they do now to encourage technological innovations for waste treatment and waste reduction.

2. An area that is far less developed technologically, and which also affects hazardous waste generators, is the technology to clean up uncontrolled hazardous waste sites addressed by the Superfund program. There are some cleanup problems which do not have proven, permanent solutions, such as soil contaminated with organic toxic chemicals, and other cleanup problems for which there are only very expensive solutions, such as contaminated aquifers. To a large extent, through taxes or through collection from responsible parties, waste generators pay the high costs for cleanup. Here too, because cleanups can cost many millions of dollars per site (there now are about 17,000 uncontrolled sites in EPA's inventory), more innovative and cost-effective cleanup technologies are needed.

3. It is possible to look at hazardous waste management as a business opportunity for small- to medium-sized firms. There is already a multibillion dollar annual market which is likely to undergo considerable expansion in the years ahead. OTA has already seen considerable evidence of creative inventors and entrepreneurs eager to enter this market with innovative technologies. However, there are problems and obstacles facing companies that attempt to enter this market. In general, Federal policies and regulations present more disincentives than incentives for market entry. For example, there are few, if any, direct assistance programs offered by the Federal government. Moreover, existing Federal agencies such as EPA generally provide little readily available and easily understood information on what exists that could help smaller companies introduce technological innovations in the hazardous waste area. Most Federal efforts have been regulatory and administrative in nature, with relatively little priority given to providing resources for research, development, and demonstration of innovative hazardous waste management tech-

nologies. Most of these problems could be corrected by changes in the policies and administrative procedures at EPA, but Congress could also consider legislatively mandated programs for development of innovative hazardous waste management technologies. No matter how good and useful a new idea is for dealing with a toxic waste problem, current regulatory policies and uncertainties combined with the absence of direct support for innovations overpower normal market forces and stand in the way of commercializing such innovations.

IMPROVED INFORMATION REVEALS A LARGER PROBLEM

The following points are given to illustrate the trends revealed by better information gathered recently as the Federal hazardous waste program has progressed:

The amount of hazardous waste being generated annually is far greater than the 40 million tons assumed for several years by EPA. New preliminary EPA data indicate a level of 150 million tons; this figure may rise to closer to the 250 million ton figure OTA reported in its March 1983 report "Technologies and Management Strategies for Hazardous Waste Control." More wastes will likely become regulated as hazardous during the ongoing Congressional reauthorization process for the Resource Conservation and Recovery Act. Later, improved data from ongoing EPA studies may extend this trend to other wastes not now regulated.

Most hazardous wastes are disposed of in the land, with most, according to recent EPA data, going into injection wells, much going into surface impoundments, and far less going into landfills. Moreover, for the most part, OTA has found EPA's regulations governing land disposal to be technically ineffective. They cannot assure the safe containment of wastes for the very long lifetimes of the most toxic wastes, perhaps hundreds of years. Although it appears that Congress will follow the lead of several States and restrict the use of land disposal, it should be understood that it will take some years before this can be accomplished. Moreover, because of past use and ineffective regulations, many currently used land disposal facilities may become uncontrolled sites in the future.

The number of uncontrolled sites in EPA's inventory is large and getting larger; there are now about 17,000 known and EPA estimates the number will rise to 22,000 in the coming months. The National Priority List for Superfund now has 539 sites on it, but EPA has indicated that perhaps about 170 sites may get cleaned up by the time the Superfund tax expires in 1985. Cleaning up sites is often technically complex and very costly. Often the cleanup is really a containment approach that leaves the waste in the land, or simply moves it to a different land disposal site. True permanent solutions that destroy or detoxify the wastes may appear to cost more money in the short term, but could be more cost-effective from a longer term perspective. The problem of handling and treating large amounts of contaminated soil is probably the most difficult one right now.

INNOVATIVE TECHNOLOGIES ARE NEEDED, BUT THERE IS NO MAJOR EMPHASIS ON DEVELOPING THEM

Clearly the nation's management of hazardous wastes has rapidly become a multibillion dollar market. But the Federal regulatory program does not directly facilitate the development and introduction of innovative waste management technologies. There is, moreover, a "catch 22" situation whereby new technologies are not regulated because they are not being used, and new technologies cannot be used because they are not regulated.

EPA has not indicated a policy that recognizes a need and commitment to move away from land disposal. This sustains considerable uncertainty in the marketplace and makes investment in innovative alternative management technologies unnecessarily risky. Regulatory emphasis has been placed on land disposal and far less on waste treatment technologies and facilities. One way to deal with this regulatory problem is to use special permitting procedures for innovative technologies to be used in a limited way to evaluate their effectiveness. It is also necessary to speed up the process for setting standards for new types of facilities.

There are other problems, including: (a) a lack of funding for laboratory research by companies on new waste management technologies, and little cooperation in providing well characterized toxic wastes for companies to work on; (b) a lack of funding for laboratory testing to independently verify and validate the claims of companies with new technologies; (c) a lack of funding for pilot and demonstration scale testing of new technologies; (d) a lack of clear information to inventors and entrepreneurs about what support programs exist to assist them in their efforts to enter the hazardous waste management market.

There does not yet appear to be a clear policy directive in EPA that would set the stage for addressing the above problems. In some cases, such as PCB contamination cleanup, a company may have to deal with up to four different programs at EPA headquarters plus regional EPA offices. Greater cooperation among EPA's programs appears necessary to set R&D priorities and implement them more effectively. Specifically, the Superfund effort does not appear to place any significant emphasis on development of innovative cleanup technologies even though there is a clear need for them.

Lastly, I want to end on a positive note by emphasizing that we see indications that inventors and entrepreneurs do have creative ideas for technological innovations that would not only provide them with profitable business, but that would also help solve the technical problems and reduce the costs facing small to medium-sized companies with waste management problems. While some Federal financial assistance and support may be effective in speeding the development and use of innovations, the most critical need now appears to be removing government impediments to companies who want to enter this market.

Mr. SKELTON. Mr. Hiler?

Mr. HILER. Thank you, Mr. Chairman.

Mr. Hirschhorn, have you been here this morning, by any chance?

Mr. HIRSCHHORN. Yes.

Mr. HILER. So you have heard much of the testimony. These people all indicated a variety of problems dealing with the variety of levels of Government bureaucracy and licensing and getting approvals and things.

Are they typical of what is happening in this industry or did we somehow manage to pick five people that are atypical?

Mr. HIRSCHHORN. I think you have got a very good statistical sample, as we might say. I think you are hearing a story that is heard everywhere. People face different sorts of problems. Sometimes you may hear the problem of Mr. Flax, for example, where they are at a very early stage of development and it is a question of getting samples, for example, of contaminated soil or it is a question of getting lab work done at EPA. For other companies who are a little further along the line, then they have problems with permits or facilities, and that process can go on for very long periods of time.

In general, though, you have also heard from a number of people and you have heard me say that the market situation right now is very much affected by Federal policies and regulations, and there the major point has to do with land disposal.

Until we remove this distortion of the marketplace by making it more economically attractive, the way it should be, to use treatment recycling, resource, recovery kinds of options, the problem will not go away.

Mr. HILER. Would you say that we are still in an infant stage in the development of technology to deal with hazardous wastes or are we further along the line than that?

Mr. HIRSCHHORN. I think we are further along the line than most people recognize. Theoretically, for every hazardous waste generated in this country, there really is a treatment or source reduction alternative to land disposal. You do not have to land dispose raw hazardous wastes. Now, you might have to land dispose the residues of treatment or stabilize wastes, and that is fine and that is necessary and acceptable.

The point is we do have a lot of technologies now. We see opportunities for more technologies coming along. As people see the economic attractiveness of the area, they will come up with new ideas.

The one situation that is a little different is the cleanup of uncontrolled waste sites, called Superfund sites. There we do not have good technical answers for a few big problems. Contaminated aquifers, for example, how do you clean those up in a cost-effective way. When you have millions of tons of contaminated soil, what do you do with that kind of problem?

I would say we have good technical solutions for newly generated wastes. We have fewer good solutions for the cleanup problem.

Mr. HILER. Thank you.

I yield back, Mr. Chairman.

Mr. SKELTON. Thank you so much, Mr. Hirschhorn. We appreciate your being with us. You have been very helpful.

Mr. HIRSCHHORN. Thank you.

Mr. SKELTON. The last two witnesses we would like to have together. Mr. Donald Ehreth is the Director of the Office of Environmental Engineering and Technology, U.S. Environmental Protection Agency, and John Skinner, Director, Office of Solid Waste, Environmental Protection Agency.

Is Mr. Ehreth here?

Mr. SKINNER. Mr. Ehreth is outside. He will be here in a second. He is going to be the witness.

Mr. SKELTON. Why don't you go ahead, Mr. Skinner, and begin?

Mr. SKINNER. Mr. Ehreth was going to be the main witness and deliver the testimony. I will wait for a second for him to come in.

Mr. SKELTON. Could you answer any of these questions for these gentlemen?

Mr. SKINNER. My responsibility is the regulatory program. It is not the research and development program. I could certainly answer questions about the regulatory program.

Mr. SKELTON. You are Mr. Donald Ehreth? Welcome.

As I stated before, your testimony will be entered into the record. Please feel free to summarize.

TESTIMONY OF DONALD J. EHRETH, DEPUTY ASSISTANT ADMINISTRATOR FOR RESEARCH AND DEVELOPMENT, U.S. ENVIRONMENTAL PROTECTION AGENCY, ACCOMPANIED BY JOHN H. SKINNER, DIRECTOR, OFFICE OF SOLID WASTE, EPA

Mr. EHRETH. Thank you, Mr. Chairman, members of the subcommittee.

Mr. SKELTON. Are you from here in Washington?

Mr. EHRETH. Yes, sir, I am. Let me introduce myself. As you already know, it is Don Ehreth. I am the Deputy Administrator for Research and Development in EPA.

If you don't mind, I would like to go ahead.

Mr. SKELTON. Did you hear all of these fellows testify earlier?

Mr. EHRETH. No, sir, I didn't hear all of the fellows, but I did hear two of the latter gentlemen.

Mr. SKELTON. Who did you hear?

Mr. EHRETH. Mr. Lopat and Mr. Hirschhorn and then the end of the gentleman just before Mr. Lopat.

Mr. SKELTON. You didn't hear Mr. Flax?

Mr. EHRETH. That is the gentleman I mean. I am sorry. Maybe I heard it backward.

We are pleased to be here this morning. Accompanying me is Mr. John Skinner, the Director of the Office of Solid Waste. We would like to discuss with you EPA's research program in the area of hazardous waste management and how that might affect small businesses.

We have a diverse program, ranging all the way from pioneering work on the chemical and biological processes occurring in underground aquifers to technical assistance in the containment and cleanup of toxic chemical spills.

If you don't mind, I would like to read the testimony. It is rather brief, but I think it is going to address some of the questions that you already indicated were of interest to you. Perhaps from that point on we can continue with the additional questions we would be happy to respond to.

Small businesses that approach EPA for assistance are usually of four types: Consulting firms, manufacturing firms, small industries, and the independent inventor.

Consulting firms, through their activities or the innovative thinking of their staff, develop new concepts and equipment, which you heard already today. Manufacturing firms will modify one of their current products or develop a new one. Small industries usually develop a new concept for handling their specific waste problems. The independent inventor often comes up with some of the most original ideas.

Innovative ideas developed by small businesses to solve hazardous waste problems——

Mr. SKELTON. It sounds like we are getting a lot of innovative ideas, but they can't go anywhere with them.

Mr. EHRETH. I think we will be talking about that as we go along, sir. I would be happy to address that issue.

Mr. SKELTON. All right, go ahead.

Mr. EHRETH. Innovative ideas developed by small businesses to solve hazardous waste problems reach us in the EPA's Office of Research and Development through several channels. They may approach one of our regional offices normally closest to them, and hopefully our regional offices would then contact us. However, they would provide their own technical assessment.

They may come directly to one of our labs, as did the gentleman who was just talking, who went to see Dr. Rogers and Dr. Clay, two gentlemen in my laboratory in Cincinnati.

Mr. SKELTON. You weren't here to hear Mr. Carolan testify, were you?

Mr. EHRETH. I am sorry, I was not.

Mr. SKELTON. Well, he had a long delay with the EPA up there in the Kansas City area. I wish somewhere along the line you would address that but go ahead. We will get to that in a few minutes.

Mr. EHRETH. After discussing research ideas with either one of these people, our regional staffs or our R&D staffs or our headquarters staffs, we would respond to them with a technical review based upon the degree of information provided to us.

Generally these contacts come in the form of letters, telephone calls, detailed proposals, sometimes just an idea, and simply face-to-face discussions, as is often encountered in my own office, as a matter of fact.

Although preliminary discussions concerning the concept are made throughout the agency, a detailed review is almost always made at the laboratory level. We would encourage small businesses to put their concepts and assistance they are requesting in writing to avoid misunderstanding and thereby allow us in the Office of Research and Development to provide better technical reviews to them.

Small businesses approach EPA primarily for four types of assistance. The first type is funds for the owner to develop a concept, to conduct pilot-scale studies, or to conduct some sort of a demonstration project. The second type is a technical review of the concept, equipment, or test results. The third type is guidance on how to develop a concept to do research or to conduct a sampling and analysis program. Fourth is to seek EPA endorsement of a product.

Most of the approaches to EPA are for funds. Typically, the small business does not have the capital, as you well know, to conduct laboratory studies because of the high cost of specialized equipment and analytical services.

To carry a new idea to the pilot-scale or full demonstration often requires a larger capital outlay. In addition, that firm may be constrained by its lack of technical and analytical services, availability of waste to conduct the studies, and the need to acquire the proper permits for working with hazardous wastes, all issues that have already come before you.

A few firms approach EPA desiring to cofund a project. In general, they are willing to pay the cost of developing the concept, but they are looking at EPA for the more costly task of conducting the pilot-scale studies or the field demonstrations or field evaluation projects.

In some cases EPA does, depending on the market forces, support these activities by sharing the cost with the developer, but in most cases we do believe that commercialization of such technology belongs in the private sector.

All the proposals that do come to the Office of Research and Development receive a technical review and response, to the best of my knowledge. Depending on the information provided, the response will include ORD's evaluation of the technical merit of the idea. In some instances, "black box" concepts are submitted to EPA which provide little or no information on how the process works or with no verifiable research data. These types of proposals are often impossible to respond to in a constructive manner without some additional information. Thereby, we would enter into an additional interaction with the proposer.

The areas in which research will be conducted in EPA are established at least 1 to 2 years in advance, based on a budgetary cycle. Within EPA research committees have been established for the hazardous waste and the Superfund programs. These committees are made up of representatives of ORD, the program offices and the regional offices.

A multiyear 5-year research strategy is prepared with the assistance of all the offices and used as a blueprint for detailed budgetary documentation. The research priorities—and I think this is a question that you probably would be asking me, as you indicated—are established with the primary goal of meeting EPA regulatory needs. These priorities are then translated into budget documents submitted through the normal process.

In other words, our research agenda is not formulated specifically to address small business concerns as such, but rather focuses on agency research requirements to underpin the development of regulatory policy.

Within the program of applied research we do encourage innovation as much as we can, and we do want to work with small business and entrepreneurs, in general to benefit from their ideas and their solutions that are amenable to the problem that we must resolve.

While the majority of our resources support regulatory programs quite directly, we do conduct a longer term exploratory research grants program, as well as a small business innovative research program, which we shall cover in detail just a little bit later.

There are some procedural restraints that result from contractual regulations and legislative authorities under which the agency operates. The agency has a very strict regulation on competitive procurements. Most of the research carried out under contract is advertised and awarded on a competitive basis. In this way, small firms compete with large firms, with the final selection being based on technical quality of the proposal and the cost.

Neither the Resource Conservation and Recovery Act, known as RCRA, or the Comprehensive Environmental Response Compensation Liability Act, known as CERCLA, authorizes EPA to enter into cooperative agreements with a profitmaking organization. Thus, the only way that EPA can cost share in this sort of arrangement is through a third party, and this procedure is the one most frequently used to support a small business.

A cooperative agreement is negotiated with a State, a university or a trade association. The agency has performed cooperative research with such groups as the Fertilizer Institute of America, the Electroplaters Society, and is currently reviewing a proposal encouraged by myself, formulated by the Association of Wood Preservers.

These institutions cooperate with EPA by providing part of the funds and directing research. The small firms, making contributions to the conduct of the project, can be intimately involved in the conduct of the research.

Occasionally, the Office of Research and Development is requested by a small business to make a technical review of a concept or the result of tests or to provide guidance on how to develop a concept or conduct a research project. We respond to those requests with a technical evaluation when sufficient information is provided.

The detail of the response depends, to a large extent, on the quality and the quantity of information provided to us and the availability of staff time. In some cases where it is appropriate the small

business firm is directed to a consulting firm for additional advice and support.

At times EPA is requested to endorse a proprietary product or system. This issue has come up earlier in testimony. It is not our policy to endorse a specific vendor's products. We do evaluate and assess technologies by generic categorizations.

Our testimony does include some examples of our activities associated with small business in recent years. Therefore, I would like to move on into the testimony and note, parenthetically, that elsewhere in the research program—that is, in our air and our water program—we are also working with small businesses.

I would like to turn to the Small Business Innovation Development Act of 1982. The Office of Research and Development has initiated a small business innovation research program which offers financial support to eligible small businesses to perform advanced research on important scientific and engineering problems in the field of pollution control.

The first year of operation of that program was 1983. EPA offered 12 topics of environmental pollution control research in its initial solicitation. As I recall, at least half of those 12 areas, obviously 6, were in the area of pollution control technology for hazardous waste-related topics. Several of these topics, as I recall, were hazardous waste treatment problems.

Twenty-seven hundred copies of the solicitation were requested by the small business community, and a total of 214 proposals were received from small businesses in 37 States and the District of Columbia. Out of that we were able to fund 10 proposals, roughly at $25,000 apiece, with the funds set aside for this purpose.

The act directs that in the first year 0.2 percent of our extramural resources be made available for SBIR awards. In the second year the percentage rises to 0.6 percent, and then to 1 percent and finally to 1.25 percent of extramural resources.

The selection of the proposals to be funded is based strictly on scientific and technical merit as determined by an in-depth technical review performed in EPA's research laboratories.

In the coming year we will again be soliciting proposals from small businesses to conduct federally sponsored research and environmental pollution control. We will support both the phase I, or the preliminary proposal, and will invite the 1983 phase I awardees to apply for phase II funding where appropriate. We expect to make over $800,000 available for these efforts in 1984.

Under the RCRA statute a permit is required to construct and operate any hazardous waste management facility. RCRA makes no distinction between research and development units and other hazardous waste treatment storage and disposal facilities. Consequently, all permit procedures and technical standards that presently apply to operating or proposed hazardous waste management facilities also apply to experimental facilities.

The agency recognizes that these standards and procedures are not well suited to experimental activities. One serious concern is that for some innovative technologies, such as the new treatment devices you heard about today, perhaps, technical standards have not yet been established under RCRA, so that there is no technical

standard against which to write a permit for research or demonstration.

Development of specific projects is difficult in part because some of the technologies are so new that little information exists on which to establish special standards. Direct RCRA authority to develop permit conditions for such technologies against a general environmental performance standard could resolve the problem.

A second constraint to experimentation is that the technical standards developed for commercially operational technologies, such as incinerators, may not be well suited for experimentation with such technologies because they do not provide the flexibility normally needed to conduct experimentation.

By limiting a facility to narrow operating limits appropriate for commercial operations, they preclude the testing of alternative operation conditions and designs that are an inherent part of technology improvement.

Finally, the current procedures for obtaining a permit may discourage experimentation. These procedures, established in regulations under section 3005 of RCRA, were developed with operational facilities in mind. Some of these procedures are necessary for any facility, including experimental facilities.

However, certain of the procedures established under section 3005(b) of RCRA may not be necessary or applicable to experimental facilities. These include a general permit application requirement for all treatment, storage and disposal facilities and the specific application requirements for container and tank storage facilities, incinerators and land disposal facilities.

Direct authority in RCRA to allow the administrator to modify or waive certain of these procedures in issuing a permit to an experimental facility would allow for expediting of the permitting process.

While the objective of promoting research and development is highly important, it cannot be done at the expense of protecting human health and the environment. Consequently, it is appropriate that this ultimate standard not be altered in any attempt to foster research.

However, special permitting standards and procedures are needed to allow research and demonstration to move forward without unnecessary constraints. The amendment proposed by yourself, Mr. Chairman, recognizes that innovative and experimental activities involving research, development, and demonstration on hazardous waste treatment technologies are fundamentally different from commercial hazardous waste activities and provides needed authority for EPA to expedite the permitting of these facilities.

That concludes the formal statement. We would be happy to answer the questions that you have.

[Mr. Ehreth's prepared statement follows:]

PREPARED STATEMENT OF DONALD J. EHRETH, DEPUTY ASSISTANT ADMINISTRATOR FOR RESEARCH AND DEVELOPMENT, U.S. ENVIRONMENTAL PROTECTION AGENCY

Good morning, Mr. Chairman and members of the Subcommittee. I am Donald Ehreth, the Deputy Assistant Administrator for Research and Development in the Environmental Protection Agency. I am pleased to be here this morning to discuss the EPA's research program in the area of hazardous waste management which affects small business through this program. We have a diverse program ranging all

the way from pioneering work on the chemical and biological processes occurring in underground aquifers, to technical assistance in the containment and cleanup of toxic chemical spills. I will also briefly discuss the permit procedures under the Resource Conservation and Recovery Act (RCRA) for research and experimental facilities.

Small businesses that approach the Environmental Protection Agency (EPA) for assistance are usually of four types: (1) consulting firms, (2) manufacturing firms, (3) small industries, and (4) the "independent inventor." Consulting firms through their activities or the innovative thinking of their staff develop new concepts and equipment. Manufacturing firms will modify one of their current products or develop a new one. Small industries usually develop a new concept for handling their specific waste problems, and the independent inventor often comes up with most original ideas.

Innovative ideas developed by small businesses to solve hazardous waste problems reach EPA's Office of Research and Development [ORD] through several channels. The small business may approach one of EPA's ten Regional Offices. These offices are normally closest to them and thus are their original contact. After discussing their research ideas with the Regional staff, they are usually referred to the appropriate ORD office either at the Washington level or a field laboratory.

The contact with EPA come in the form of brief letters, telephone calls, detailed proposals, or simply face-to-face discussions. Although preliminary discussions concerning the concept are made throughout the Agency, a detailed review, when appropriate, is almost always made at the Laboratory level. We encourage the small businesses to put their concepts and the assistance they are requesting in writing, to avoid misunderstanding and to allow us to provide better technical reviews.

Small businesses approach EPA for primarily four types of assistances: (1) funds for the owner to further develop a concept, to conduct pilot scale studies, or to conduct demonstrations; (2) technical review of concepts, equipment, or test results; (3) guidance on how to develop a concept, to do research, or to conduct a sampling and analysis program; and (4) seek EPA endorsement of a product. I will address each of these a bit later in term of how we respond to each of these issues.

Most of the approaches to EPA are for funds. Typically, the small business does not have the capital to conduct laboratory studies because of the high cost of specialized equipment and analytical services. To carry a new idea to the pilot scale or full demonstration often requires a larger capital outlay. In addition, the firm may be constrained by its lack of technical and analytical services, availability of waste to conduct studies, and the need to acquire the proper permits for working with hazardous wastes.

A few firms approach EPA desiring to co-fund a project. In general, they are willing to pay the cost of developing the concept, but are looking to EPA for the more costly task of conducting the pilot scale studies or demonstrations. In some cases, depending on market forces, EPA does support this activity by sharing the cost with the developer but in most cases we believe commercialization of such technologies belongs in the private sector.

All proposals that come to the Office of Research and Development receive technical review and response. Depending on the information provided, the response will include ORD's evaluation of the technical merit of the idea. In some instances, "black box" concepts are submitted to EPA which provide us with no information on how the process works or with no verifiable research data. These types of proposals are often impossible to respond to in a constructive manner without additional information.

A very structured planning process takes place within the Agency to establish research priorities. The areas in which research will be conducted are established 1 to 2 years in advance. Within EPA, research committees have been established for the Hazardous Waste and "Superfund" programs. These committees are made up of representatives of ORD, the program offices, and the Regional Offices. A five year research strategy is prepared and approved by all offices and used as a blueprint for detailed budgetary documentation. Research priorities are established with the primary goal of meeting EPA regulatory needs. These priorities are then translated into budget documents submitted through the normal process. In other words our research agenda is not formulated specifically to address small business concerns as such, but rather focuses on high priority Agency research requirements to underpin the development of regulatory policy. Within the program of applied research we do encourage innovation as much as we can, and want to work small business and entrepreneurs in general to benefit for ideas and solutions that are amenable to the problem we must resolve. While the majority of our resources support this regulatory program quite directly, we do conduct a longer term exploratory research

grants program and a Small Business Innovative Research program which we shall cover in more detail later.

There are procedural restraints that result from contractual regulations and legislative authorities under which the Agency operates. The Agency has very strict regulations on competitive procurements. Most of the research carried out under contract is advertised and awarded on a competitive basis. In this way small firms compete with large firms with the final selection being based on technical quality of the proposal and the cost.

Neither the Resource Conservation and Recovery Act [RCRA] or the Comprehensive Environmental Response, Compensation and Liability Act [CERCLA] authorizes EPA to enter into cooperative agreements with a profit making organization. Thus, the only way EPA can cost share is through a third party, and this procedure is the one most frequently used to support a small business. A cooperative agreement is negotiated with a State, University or trade association. The Agency has performed cooperative research with such groups as the Fertilizer Institute of America, the Electroplaters Society and is currently reviewing a proposal encouraged by EPA formulated by the Association of Wood Preservers. These institutions cooperate with EPA by providing part of the funds, and directing the research. The small firms make contributions to the conduct of the project and can be intimately involved in the conduct of the research.

Occasionally the Office of Research and Development is requested by a small business to make a technical review of a concept or the results of tests, or to provide guidance on how to develop a concept, or conduct a research project. We respond to these requests when sufficient information is provided. The detail of the response depends to a large extent on the quality and quantity of information provided to us and the availability of staff time. In some cases, where it is appropriate the small business firm is directed to a consulting firm.

At times EPA is requested to endorse a proprietary product or system. It is not our policy to endorse specific vendors' products. We do evaluate and assess generic technologies.

I would like to give you examples of the activities associated with small business and our Cincinnati Research Laboratories. In the last three years, the Municipal Environmental Research Laboratory—Cincinnati has received between six and ten inquiries per year relating to hazardous waste ideas from small businesses. Technical reviews and comments have been provided on all of these inquiries. Some firms have been referred to the SBIR program. In this period, one project funded dealt with the limited scale demonstration of a method to isolate hazardous waste at an uncontrolled dump site by using a bentonite barrier to isolate the hazardous waste from the aquifer.

The Industrial Environmental Research Laboratory-Cincinnati has had similar experience. Support of five projects involving small businesses has been provided. In three of the five cases, support to the small business recipient was derived through cooperative agreements to states for testing of innovative hazardous waste disposal processes. Processes investigated included High Temperature Fluid Wall Reactor, Super Critical Water Reactor, and Plasma Arc. In a fourth project, EPA personnel worked with a small printed circuit board plant to evaluate an innovative rinse system for reducing hazardous wastes generated. In this case, EPA's support consisted of manpower and cost of supplies required for this cooperative evaluation. In the fifth case, support to the small business recipient was through a cooperative agreement with a University to develop the bentonite barrier described earlier.

It must be noted parenthetically that elsewhere in the research program, e.g., in air and water, we are working with small businesses.

In accordance with provisions of the Small Business Innovation Development Act of 1982, the Office of Research and Development has initiated a Small Business Innovation Research Program which offers financial support to eligible small businesses to perform advanced research on important scientific and engineering problems in the field of pollution control.

The first year of operation of this program was 1983. EPA offered twelve topics of environmental pollution control research in its initial solicitation. Several of these topics included hazardous waste treatment problems. 2,700 copies of the solicitation were requested by the small business communities and a total of 214 proposals were received from small businesses in 37 states and the District of Columbia. Ten proposals were funded at roughly $25,000 apiece with the funds set aside for this purpose. The Act directs that in the first year, 0.2 percent of our extramural resources be made available for SBIR awards. In the second year, the percentage rises to 0.6 percent, then to 1.0 percent, and finally to 1.25 percent of extramural resources. The selection of proposals to be funded is based strictly on scientific and technical merit,

as determined by in-depth technical reviews performed in EPA's research laboratories. Several of the awardees are working on projects related to the treatment or containment of hazardous wastes.

In the coming year we will again be soliciting proposals from small businesses to conduct Federally sponsored research in environmental pollution control. We will be supporting both Phase I, or preliminary proposals and will invite the 1983 Phase I awardees to apply for Phase II funding where appropriate. We expect to make over $800,000 available for these efforts in FY 1984.

PERMIT PROCEDURES FOR RESEARCH AND EXPERIMENTAL FACILITIES

Under the RCRA statute, a permit is required to construct and operate any hazardous waste management facility. RCRA makes no distinction between research and development units, and other hazardous waste treatment, storage and disposal facilities. Consequently, all permit procedures and technical standards that presently apply to operating or proposed hazardous waste management facilities also apply to experimental facilities.

The Agency recognizes that these standards and procedures are not well suited to experimental activities. One serious concern is that for some innovative technologies, such as new treatment devices, technical standards have not yet been established under RCRA, so that there is no technical standard against which to write a permit for research or demonstration. Development of specific subjects is difficult in part because some of the technologies are so new that little information exists on which to establish special standards. Direct RCRA authority to develop permit conditions for such technologies against a general environmental performance standard could resolve this problem.

A second constraint to experimentation is that the technical standards developed for commercially operational technologies, such as incinerators, may not be well suited for experimentation with such technologies because they do not provide the flexibility normally needed to conduct experimentation. By limiting a facility to narrow operating limits appropriate for commercial operations, they preclude the testing of alternative operation conditions and designs that are an inherent part of technology improvement.

Finally, the current procedures for obtaining a permit may discourage experimentation. These procedures, established in regulations under Section 3005 of RCRA, were developed with operational facilities in mind. Some of these procedures are necessary for any facility, including experimental facilities. However, certain of the procedures established under Section 3005(b) of RCRA may not be necessary or applicable to experimental facilities. These include the general permit application requirements for all treatment, storage and disposal facilities and the specific application requirements for container and tank storage facilities, incinerators, and land disposal facilities. Direct authority in RCRA to allow the Administrator to modify or waive certain of these procedures in issuing a permit to an experimental facility would allow for expediting of the permitting process.

While the objective of promoting research and development is highly important, it can not be done at the expense of protecting human health and the environment. Consequently, it is appropriate that this ultimate standard not be altered in any attempt to foster research. However, special permitting standards and procedures are needed to allow research and demonstration to move forward without unnecessary constraints. The amendment proposed by Chairman Skelton recognizes that innovative and experimental activities involving research, development, and demonstration on hazardous waste treatment technologies are fundamentally different from commercial hazardous waste activities and provides needed authority for EPA to expedite the permitting of these facilities.

That concludes my statement. I will be happy to answer any questions you may have. Thank you.

Mr. SKELTON. Before I ask Mr. Hiler, I want to first say a word of thanks for the cooperation Mr. Steve Lingle of your office gave me in drafting the amendment to which you referred. As you know, it was adopted on the House floor. Let's hope it survives over in the Senate side. We do thank you both for loaning us Mr. Lingle with his expertise.

Mr. SKINNER. You are welcome. We will pass that on to Mr. Lingle.

Mr. EHRETH. We appreciate the opportunity of working with the staff to do that.

Mr. SKELTON. Mr. Hiler?

Mr. HILER. Thank you, Mr. Chairman.

I have several questions, but they are probably not necessarily related to each.

Is it possible for a technology to be approved in one region of EPA and not be approved in another?

Mr. SKINNER. Are you talking about a stationary technology? All of the permits under the Resource Conservation and Recovery Act must be issued at a specific location, so an incinerator will be permitted at a particular location. If it is a mobile facility and it was to go to another location, it would have to be repermitted there.

Mr. HILER. Even though the technology is the same?

Mr. SKINNER. That is correct. That is a requirement of the act.

Mr. EHRETH. What you are asking is, is there a national standard, essentially, a national permit——

Mr. SKINNER. We do not have the authority to write a national standard so that a mobile type of facility could travel around the Nation and not have to obtain a new permit at every site.

Mr. HILER. That seems to be inefficient.

Mr. SKINNER. For certain types of facilities it is. There is a requirement for local notice and a local hearing and a site specific permit in the act. I could conceive of situation where you could write a national permit and perhaps have the local hearing focus very narrowly on issues that pertain to that particular location, but the way the act is written, the entire permit is reopened in every situation.

Mr. EHRETH. I think there is also a concern for exposure, essentially, as well. As Mr. Skinner indicated, it is site specific and it is a function of where that particular device is located. Consequently, that relates directly to the degree of exposure or protection of human health and the environment that is associated with that particular site.

Mr. HILER. Sure, I understand that, I suppose, but if the technology is approved in one region, let's say it is approved at the national level and it demonstrates that this technology can incinerate PCB's to 99.99 percent, it seems rather foolish to me that that then has to be demonstrated in every region of the country. I can understand where if you were going to take the mobile unit to some particular area and you have to get a local permit, I can understand that part of it, I suppose. But it seems to me to have to go through——

Mr. SKINNER. The first time that it was permitted, all of the technical information that was developed and the decision process that we went through would all be used in subsequent locations. We wouldn't require a second trial burn if the waste was the same. If the waste change, we may require an additional trial burn on an incinerator, for example.

In any case, before they could operate at a second location they would have to go through a permit hearing a second time. All of the information we developed in the first hearing would be reused again to the extent that it was applicable. I mean, we wouldn't start from scratch again, but it would require a separate approval.

Mr. HILER. What about technologies that go into a stationary site? Do those have to be demonstrated in each region where they go as well?

Mr. SKINNER. Again, if you use incineration as an example, someone building an incinerator of the exact same type in a second region can use the results of the evaluation of the first incinerator as part of their application in the second region. They could use the trial burn information, they could use whatever testing information they did in the second instance, but again, in that second instance it would have to receive a separate permit.

Mr. HILER. Is it possible for a situation to occur where a technology that was approved in one region would not be approved in another?

Mr. SKINNER. It shouldn't happen if we provide proper overview, assuming that it is just a technical decision that is being made. If there were location differences that caused different decisions, then obviously it could happen. If we are talking about a straight technical decision based upon the operation of the technology, it should be approved in one region and then approved in others as well.

Mr. SKELTON. So many of these people that were here today had some fairly significant complaints about this whole permitting process and the time period it takes. Isn't there any way this can be sped up?

Mr. SKINNER. The permit process is designed for commercial facilities, and other large-scale facilities that are expected to be operating for long periods of time. It involves a very careful, comprehensive review of those facilities, and it is designed for all different types of facilities, from landfills to incinerators to storage facilities. It takes a long time to go through that.

We feel that some of the amendments that have been suggested by the chairman would reduce the time and reduce the complexity of that significantly for new and innovative technologies because right now, the way the act is structured, we don't have the ability to distinguish between new experimental facilities and existing commercial operations.

Mr. HILER. Were you here for the testimony of Mr. Reese from Cadence Chemicals?

Mr. SKINNER. I don't believe so. I just came in toward the end.

Mr. HILER. One of the concerns that he had was that this whole permitting process—it is like every time something comes up he has to reinvent the wheel and go through the whole thing again and days and days and days and weeks and months of process.

It seems to me we are becoming too enamored with the process of issuing a permit rather than the fact that if we issue the permit and get the job done, that is what we ought to be interested in doing. We are so tied up in the process of getting to that. There has got to be a better way. It is just ridiculous to me to hear these stories about how long it takes for a permit to be given.

I was in private industry. I know the runaround you get in government. Mr. Flax, I know exactly what you were talking about, to call this person, call that person, call that person. Nobody wants to take responsibility.

It seems to me that somebody ought to have the ability to come in and get all the principals there at once and say this is what you

need, this is what you need, this is what you need, and go around the room.

Someone mentioned that Governor Brown did it in California for a short time, where they have the ability to get all the principals in a room who are doing this permitting process so that the person knows what to do.

It seems ridiculous to me that we have all these technologies out here, that are budding technologies, that were in some cases proven technologies, and the hangup is in the permitting process. It seems to me totally inefficient. Meanwhile, we have cases like Times Beach and the other cases, which demand immediate attention and we get hung up on a permitting process.

Mr. SKELTON. What is even worse, if I may add to that, is that Mr. Flax has had inquiries from three other countries—Switzerland, England, and Japan—and we are fiddling. Some people lose patience and sell it to England, Japan, and Switzerland.

Go ahead, sir.

Mr. SKINNER. We have done a number of things to try and make the permitting process more efficient. We do meet with applicants. We do sit down with them. We hold training sessions for applicants, where we explain to them how to fill out the applications. We hold training sessions for our permit writers so they know how to process the applications. We try and hold our regional offices to deadlines on reaching certain stages of permit processing.

Quite often in some of these technologies you run up against very complex, technical issues, the design of a landfill or design of an incinerator, which take time to evaluate.

We have to remember that part of the program is a regulatory program. The purpose of it is to control these technologies, to control the emissions from them, to control the releases of them. We are very concerned about releases from these facilities, and we look at them very, very carefully.

While I am welcome to any suggestions on improving efficiency of the operation, doing things faster, doing things better, when you get down to it we are involved in administering a fairly complex regulatory program and that quite often does work counter to innovation and new ideas and bringing things on line quickly.

That is why an amendment which would give us the authority to break off experimental facilities—and deal with them differently—and not subject them to the same rigorous review that we subject other facilities—while at the same time providing some control for those facilities is a very good idea.

Mr. HILER. I have one more question, Mr. Chairman. I know the hour is getting late.

If I came to you and I had a process or a product for dealing with some type of hazardous waste, and I had been working in my garage, or in my building, or in my business, or whatever it was, and I came to you and said, "This is what I have," how long would it take for me to be able to go out and make that process or that product commercially available?

Mr. SKINNER. If you were asking for a permit to build a full-scale facility and put that on line?

Mr. HILER. I don't know exactly what I am asking. I have an idea in my head and I have been able to make K-20, or whatever it is,

K-2—I guess that is the spray stuff, it is not K-2—K-20, or whatever your number was, and I come to you and say, "I have got this K-20 and this stuff is just the best thing since Swiss cheese to take care of liquid hazardous waste and to insulate it."

How long is it going to take before I can go out and sell that stuff?

Mr. SKINNER. A full-scale commercial facility, probably 18 months to 2 years.

Mr. HILER. That is before I can even begin to construct the building to make this stuff?

Mr. SKINNER. That is correct.

Mr. HILER. Eighteen months to two years.

Mr. EHRETH. I think what Mr. Skinner is also including in that estimate is a proof of concept; in other words, demonstration that the technology does work to the satisfaction of whoever the purchaser is. That is part of the market forces. That is where they begin to enter into it, the acquisition of venture capital and things like that.

Mr. HILER. As a businessman, I worry about selling it to the people. I am worried about selling it to you.

Mr. EHRETH. That is just the issue. Who do you sell it to? Do you sell it to us or do you sell it to the user? Obviously we get involved in the middle because of the permit process.

Mr. HILER. Let's put it this way. I think what Mr. Flax was saying is that he has no problem selling it to the end user. He is probably selling it to you to get the approval to sell it to the end user.

Mr. EHRETH. I heard you.

I would like to add a couple things also to what Mr. Skinner said in terms of who might you contact in EPA.

Let me advise you that within EPA we do have a small business ombudsman, a gentleman by the name of Mr. Mark Jones. Perhaps by mentioning that here today——

Mr. SKELTON. If that were the case, why was he bounced around? Why was Mr. Flax bounced around from place, to place, to place?

Mr. EHRETH. I wish I could give you a good answer to that. I don't like to hear those kinds of stories about EPA or any other place, to be quite honest with you. We try to treat people when they come to the office just as efficiently and quickly as we possibly can.

Quite often I will have people come to my office and at that moment will get on the telephone to a laboratory and begin to talk to them, and begin to set up the meetings. Sometimes it works out efficiently; sometimes it doesn't. I don't claim to have any fame to efficiency. Nevertheless, we do try to, and I am sure Mr. Skinner's people try to do the same thing, but there are other pressures upon them that require sometimes, "Gee, I need to take that telephone call a little later or I need to work on this little thing."

Mr. HILER. I understand that you are dealing with a tremendously complex law. There is no question about it. I think that is why some of these laws take so long to even get written up here because they are tremendously complex and some folks up here think that the more you have every "i" dotted and "t" crossed, the better you

are, and others think that if we had less of that and be more result-oriented, we would be better off.

I realize you are dealing with technically a very complex set of circumstances, but the delays in the permitting—that is seen from the testimony this morning to be very frustrating. We are stifling innovation at a time when we need innovation. When Government serves to put up impediments to constructive solutions, I think we have to do whatever it takes to try to get around that.

Mr. EHRETH. May I respond to one aspect you mentioned before, Mr. Chairman?

In all fairness to the permitting program and to the regulatory program, I must admit that from a technical perspective we are also in a learning stage. For instance, just putting something into a combustion process is only part of it.

Learning what happens to it within that combustion process, what might be the products of incomplete combustion, for instance, what comes out the top, and just knowing how to sample and analyze for what comes out the top or wherever it might come out is a very, very difficult technical issue that, quite frankly, isn't addressed normally by the inventor of the process, but somebody has to know that information so as to be able to determine what is the proper protocol to establish for testing and verification.

So that is where we are. That is where our research is heading us.

Mr. HILER. Thank you, Mr. Chairman.

Mr. SKELTON. Mr. Hiler asked all my questions, but let's go back just for a minute to the inordinate delays that we have. I guess, Mr. Skinner, you would have to answer this.

Do you have a set policy requiring a response within a certain length of time?

Mr. SKINNER. For permits under the Resource Conservation and Recovery Act, which I administer—there are other permit programs in the Agency as well—for a new facility, when an application is submitted, our goal is to respond with a notice of deficiency within 30 days. For an existing facility it is within 60 days. So, after the permit comes in, if there are deficiencies in it, we try and get back——

Mr. SKELTON. No, no. Mr. Carolan, whom you did not hear, testified that he waited some 10 months, and after 10 months he got a letter saying, "we need more information."

Mr. SKINNER. That clearly should not have happened.

Mr. SKELTON. Absolutely not.

Mr. SKINNER. I don't know the circumstances in that instance. I don't know whether that was being permitted under the Resource Conservation and Recovery Act, other programs or what, but that is how we try and operate. Now, we always don't make that. Quite often what we try to do is to get back with at least an initial indication that there are major areas that need improvement and then follow up later with——

Mr. SKELTON. Bottom line, other than the amendment which you were kind enough to help us with—and let's keep our fingers crossed and hope it passes over in the Senate side—other than that, do you have a recommendation to help the end product, get processes that are safe and yet get them within a reasonable length

of time permitted? Do you have other recommendations that we in Congress should consider?

Mr. EHRETH. From the Office of Research and Development's perspective we are very happy with that and we feel that is going to go a long way toward helping our situation.

Mr. SKELTON. As far as you are concerned, would the one amendment satisfy your needs?

Mr. EHRETH. It will certainly help us in our research program. There is no doubt about that.

Mr. SKELTON. Mr. Skinner?

Mr. SKINNER. Yes; I agree with that. I think it goes a very long way.

Mr. SKELTON. You don't think we need anything but that?

Mr. SKINNER. Nothing else that comes to mind.

Mr. SKELTON. How about manpower? The complaints to these gentlemen were that there are not enough of us to do all this.

Mr. SKINNER. We have a big backlog of work. In addition to the 50 or 60 new permit applications that we have every year, we have a backlog of about 9,000 applications that we have to work off.

Mr. HILER. 9,000?

Mr. SKINNER. That is correct.

Mr. HILER. And you are getting 50 to 60 a year now?

Mr. SKINNER. Fifty to sixty new ones in addition to that a year.

Mr. HILER. When did those 9,000, that would go back to 1940.

Mr. SKINNER. Those are existing facilities. They are existing facilities which have to be permitted under the program. There are approximately 9,000 of them.

Mr. SKELTON. What type of request did you make for moneys for manpower and what did you get?

Mr. SKINNER. I don't have the budget figures in front of me. They allow us to process about 1,000 permits a year at the current resource levels, so we are talking about a 9- to 10-year program.

Mr. SKELTON. That is about a 9- to 10-year program backlog.

Mr. SKINNER. Approximately; yes.

Mr. SKELTON. In your request, did you point this out, that you need more people?

Mr. SKINNER. We explained what we could do at various budget levels.

Mr. SKELTON. Do you think that the enforcement end of the EPA is getting the bulk of the people and your end of it is getting shortchanged?

Mr. SKINNER. I really don't think I should get into an interoffice——

Mr. SKELTON. Quite honestly, I think you should because if you are not able to do your job and we can help fix it, you ought to tell us.

Mr. SKINNER. I think in addition to level of resources, which clearly with more resources you can do things faster, there is no question about that. There is a question of expertise and skill mix. In a lot of these areas it would probably be difficult to find the right skills, hydrogeologists, chemical engineers, and to hire them onboard. So, while you could probably improve the rate of permitting with more people, it is not in direct relation to that.

Mr. SKELTON. Are you finding a shortage of skilled engineers and hydrogeologists out there in the world?

Mr. SKINNER. Yes, we are.

Mr. SKELTON. Are you having to hire foreign nationals to meet any of these qualifications?

Mr. SKINNER. Not that I am aware of.

Mr. SKELTON. Mr. Hiler, anything else?

Mr. HILER. No, Mr. Chairman.

Mr. SKELTON. Gentlemen, thank you so much. I appreciate all of you taking the time to testify. It is very helpful to us. I hope we can continue on the road to developing a policy to encourage promoting the use of safe and cost-effective alternatives.

Thank you all so much.

We will place additional materials submitted by witnesses and other interested persons in the appendix to these hearings.

[Whereupon, at 12:20 p.m., the subcommittee adjourned, to reconvene subject to the call of the Chair.]

APPENDIX

STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY GEORGE DEUKMEJIAN, Governor

DEPARTMENT OF HEALTH SERVICES
714/744 P STREET
SACRAMENTO, CA 95814
(916) 324-1819

November 18, 1983

U.S. House of Representatives
Small Business Subcommittee
on Energy, Environment and Safety
Attn: Brenda Pauley
House Annex 2
Room 567
Washington, D.C. 20515

Dear Ms. Pauley:

Per your request under a separate envelope we had forwarded to you copies of materials, which illustrate how our agency has proceeded in evaluating and issuing permits for demonstration of unfamiliar technologies, which have a potential to provide a viable alternative to land disposal of hazardous wastes.

As you can see our permitting approach involves issuance of short term permits with requirements for extensive monitoring, which is designed to respond to concerns of responsbile regulatory agencies, who are intimately involved in permitting and monitoring of each project on a continuous basis. Results of these monitoring programs serve later as a basis for development of a final permit, and provide basis for environmental acceptability review of the project under California Environmental Quality Act.

It is hoped that these materials will be useful to you. If you desire additional information, please, do not hesitate to call me at the above telephone number.

Sincerely,

Jan Radimsky, P.E.
Alternative Technology & Policy
Development Section
Toxic Substances Control Division

PROJECT STATUS REPORT - GENERAL PORTLAND CEMENT

PROJECT DESCRIPTION

This project was conceived to demonstrate the capability of a cement manufacturing kiln to destroy spent hazardous industrial solvents. The facility has the added advantage of the recovery of heat energy from the combustion of the waste solvents as supplementary fuel. The Los Robles facility is capable of burning about 9 tons of coal per hour or cofiring up to 1000 gallons per hour of waste solvent with about six tons of coal per hour. The supplementary fuel can represent up to 30 percent of the total heat input required to produce raw product clinker.

Waste solvent is received in tank trucks, pumped to an unagitated storage tank, sampled, and then pumped to the kiln's burners to be cofired with air-blown, micronized coal. Solvent quality assurance is carefully maintained by a consultant firm, the Systech Corporation. Kiln temperature is maintained at about 2400°F to 2600°F (1315° C to 1430° C). The raw materials in the process are dry crushed rock and additives which are fed counter-current to the flow of combustion gases in the inclined kiln. The system is operated under slightly negative pressure with clinker leaving the lower end of the kiln and combustion gases leaving the upper end. Particulate matter entrapped in the kiln gas is collected by cyclones and a baghouse. Sampling for the emissions of particulate matter and gaseous pollutants can be done at the exit of one or more of the baghouse compartments. The facility has no exhaust stack.

General Portland Cement Company (Los Robles Facility)

Status of Emissions Testing

The Engineering Evaluation Branch of the Air Resources Board developed a protocol for sampling and analyses of emissions from the Los Robles facility both before and during the burning of hazardous waste solvents. Baseline emissions (Phase I) were sampled in April 1982 when the plant burned coal only. Emissions were again sampled in Sept. 1982 (Phase II) during the cofiring of a mixture of of waste solvents and coal. The lab analyses for Phase I and Phase II are about 90 percent complete and ARB's evaluation of the test results is still in progress. A rough draft report on the above is expected to be available from ARB about the end of December.

The principal organic hazardous components (POHC) found in the waste solvents were methylene chloride, 1,1,1 trichloroethane, dichloroethane and benzene. Preliminary results indicate destruction removal efficiencies (DRE) for these toxic pollutants are greater than 99.99 percent (as recommended by EPA guidelines document). There has been no significant increase (less than 10 percent) in Phase II toxic emissions over Phase I toxic emissions except for benzene which has increased by about 30 percent during the combustion of waste solvents. The average concentration of benzene was about 370 ppb during the waste solvent runs compared to 290 ppb during the coal runs.

The Systech Corporation headquartered in Xenia, Ohio has been monitoring a similar operation at a wet cement process kiln in Paulding, Ohio commensurate with contractual agreement with General Portland Cement Company since 1979. The Ohio State Environmental Agency has endorsed the plant as an environmentally acceptable alternative hazardous waste disposal facility.

The role of the affected regulatory agencies in this project has been as follows. A task force was formed in late 1981 to coordinate the activities of the Office of Appropriate Technology (OAT), ARB and DOHS. A discussion paper was issued in April 1982 by the task force which cited the successful destruction of chlorinated hydrocarbons by cement kilns in New York, Ohio, Illinois, Norway and Sweden. The task force working in cooperation with Systech Corporation and the General Portland Cement Company recommended test burns in California. Accordingly, the Department of Health Services prepared a "Negative Declaration" for the project and issued an initial permit effective through October 20, 1982.

EPA considers the project to be an "Energy Recovery Facility" and has granted the company an exemption from that agency's permitting process. The concerns of ARB and the local air district, Kern County Air Pollution Control District (KCAPC) were made known by a "List of Testing and Analyses Requirements", dated January 5, 1982. The local district exempted the project and considered it to be an Experimental Research Program. The company was granted an interim permit extension in October by DOHS effective through April 20, 1983 to complete the analyses and evaluation for the Phase I and Phase II data collection period. Since then the company has applied for a final permit. Processing of this permit has not been initiated.

General Portland Cement Company

Future Tasks

1. Review of Trial Burn Findings

Subject to confirmation in the ARB report, expected in late December 1982, the trial burns with waste solvents appear to have had acceptable destruction/removal efficiencies (DRE) for the selected principal organic hazardous constituents (POHC).

- The analyses for trace concentrations of air emissions of poly-chlorinated biphenyls have yet to be completed.

- ARB data reduction of heavy metals in bag-house residues is in progress. Final report on above items is expected in late December.

2. Evaluation of Trial Burn Results

As portrayed on the attached "Decision Tree" sheet the affected task force members DOHS/KCAPCD/OAT will need timely receipt of the ARB's Engineering Evaluation Report. Decisions on the following are needed:

- Should a new round of samples be obtained to detect polychlorinated aromatics (PCA)? A more rapid analysis of such samples is required and costs may be in the vicinity of $20,000 for such additional sampling and analyses. Only a few "high tech" labs are qualified to do the analyses.

- Can DOHS/Epidemiology Section make a judgement on risk assessment based only on results at similar facilities; e.g., dibenzo furans @ 20 ng/m^3 (~2 ppt)[1/] at a Puerto Rico wet kiln? Another wet process kiln (Sweden)

1/ 2 parts per trillion by volume in kiln exhaust

reported not finding any detectable quantities of dioxins or furans. Other literature searches are in progress (Norway).

- Should ARB perform "Atmospheric Dispersion" modeling based on emissions of PCAs either those to be detected by further California testing or those based on emissions found in the literature?

- Should ambient monitoring tests be made before and during solvent fuel runs.

3. Development of CEQA Document

- Local entities were contacted; no apparent problems.

- DHS (Regional Office) will need input from AT&PD Section and other task force members to provide additional guidelines to General Portland Company's input for an acceptable "Operation Plan".

- Additions to check lists for significant impacts may need to be developed.

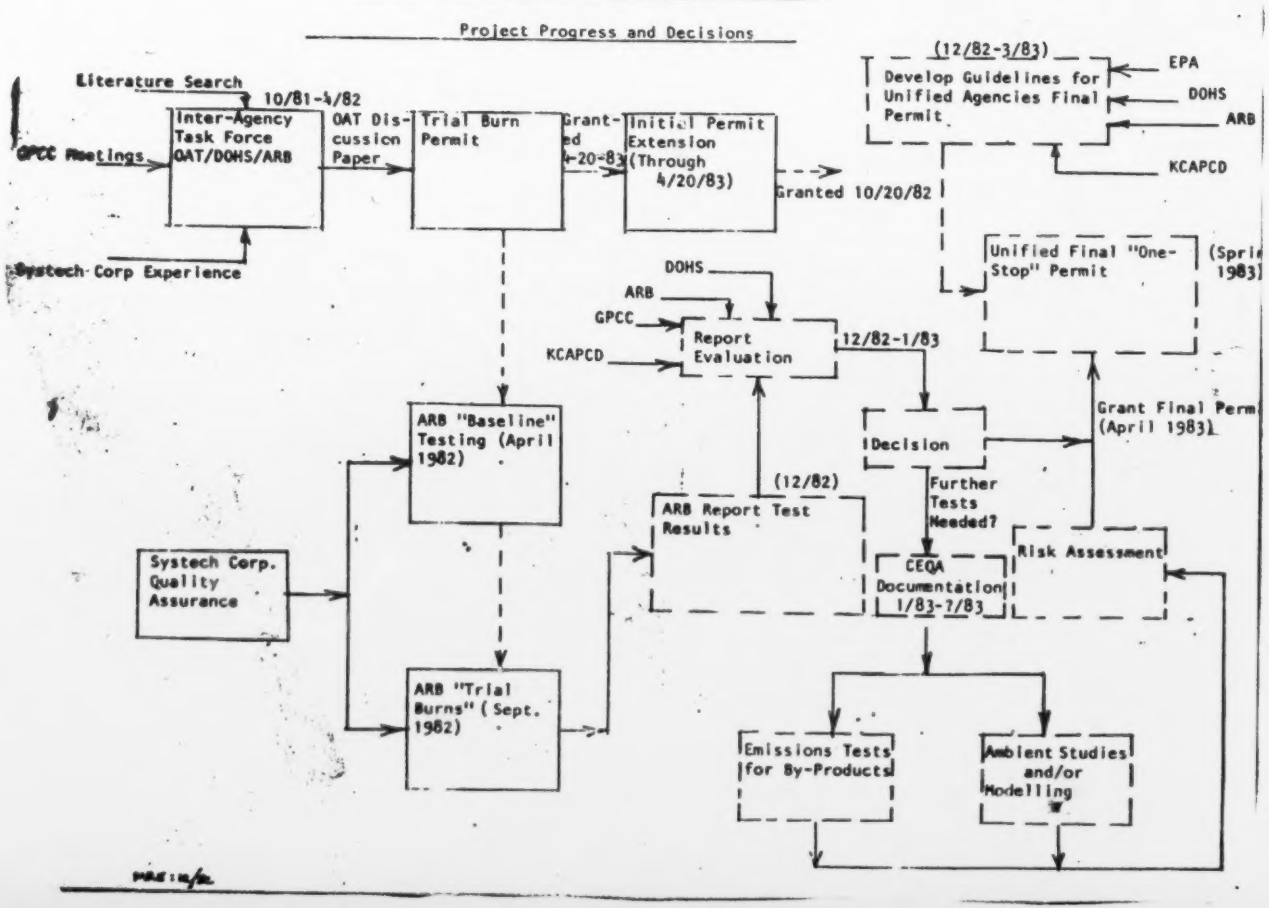
- Will an EIR be needed to evaluate impacts, alternatives, mitigation and other requirements?

4. Development of Final Permit for Facility

The above sections should provide acceptable input to make up this permit. Post-permit emissions monitoring may be required.

GENERAL PORTLAND CEMENT

Project Progress and Decisions



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General Portland Cement Project

Principal Contacts	Company or Agency	Phone Number
Radimsky, Jan Eriksson, Dick	Dept. of Health Services Alternative Technology & Policy Development Sec. 714 P Street Sacramento, CA 95814	(916) 324-1819
Imada, Miles Ed Voinp	Air Industrial Hygiene Lab. 2151 Berkeley Way Berkeley, CA 94704	(415) 540-2640
Sandhu, Mohinder	Dept. of Health Services Hazardous Waste Mgmt. Branch 5545 E. Shields Ave. Fresno, CA 93727	(209) 291-5321
Simmons, Bart	Dept. of Health Services Hazardous Materials Lab. 2151 Berkeley Way Berkeley, CA 94704	(415) 540-3003
Tichinin, Phyllis Taylor, Megan	Dept. of Health Services Program Development 714 P Street Sacramento, CA 95814	(916) 323-6578
Workman, Eric	Dept. of Health Services Permits, Surveillance and Enforcement Section 714 P Street, Room 550 Sacramento, CA 95814	(916) 324-2436

Other Affected Parties

Chadbourne, John	General Portland Cement Co. P.O. Box 324 Dallas, TX 75221	(214) 387-9000
Chichester, Mark	Kern Co. Air Pollution Control District 1601 H Street, Suite 250 Bakersfield, CA 93301	(805) 861-3682
Jackson, Susi	EPA Region IX, Toxic and Waste Programs 215 Fremont Street San Francisco, CA 94105	(415) 974-8390
Lew, George	Air Resources Board, Regional Planning P.O. Box 2815 Sacramento, CA 95670	(916) 322-2886

NEGATIVE DECLARATION 1

1. Project Description and Common Name

The project is an "Energy Recovery Facility at the Los Robles Cement Plant of General Portland Inc." The project involves testing the use of waste industrial solvents as supplementary fuels in the manufacture of cement. The test period will last for six months, unless expressly extended by the California State Department of Health Services (DHS) to a total period not to exceed twelve months. The project proponent has submitted an application to the DHS for a temporary Hazardous Waste Facility Permit to allow the use of waste solvents classified by the DHS as hazardous.

2. Project Location and Name of Project Proponent

Location: The existing Los Robles Cement Plant situated near Lebec, Kern County, California.

Project Proponent: General Portland Inc.
P.O. Box 49026
Los Angeles, CA 90049

3. Findings

The DHS finds that the project will not have a significant deleterious effect on the environment, based on the results of the Initial Study.

4. Initial Study

(See attached copy of Initial Study)

5. Mitigation Measures

Although the DHS has concluded that the project will not have a significant deleterious effect on the environment, the DHS has summarized here the various requirements imposed by the DHS and Kern County Air Pollution Control District on the project proponent to protect public health and the

environment:

a. The use of haulers registered with the DHS to transport hazardous waste solvents to the project, and the use of the Hazardous Waste Manifest.

b. Complete containment of the waste solvents throughout all steps involved in handling the solvents.

c. Screening of incoming waste solvents to ensure that only suitable solvents are accepted.

d. Operation of the project in accordance with pertinent experience that the proponent has developed at other of its plants.

e. The use of waste solvents only as supplementary fuels to preclude dependence on them if governmental requirements cannot be met.

f. Close monitoring of the chemical composition of waste solvents, of kiln emissions, and of kiln operation parameters (temperature, residence time, etc.).

g. Compliance with Hazardous Waste Facility Permit conditions established by the DHS for public health and environmental protection.

1. Project Description and Location

General Portland Inc. has applied for a Hazardous Waste Facility Permit to the California State Department of Health Services (DHS) for an experimental project to test the use of waste industrial solvents as supplementary fuels for the operation of the company's Los Robles Cement Plant situated near Lebec, Kern County, California.

The proposed project consists of two phases. Phase I, (test phase) will involve the evaluation for a period of six months of the plant's performance when operated with supplementary fuels and of the availability of such fuels. Phase II, (operational phase) will involve the construction of supplementary-fuel storage tanks at the plant and the conversion of an existing fuel oil storage tank for storage of supplementary fuels. The results of Phase I will determine whether the company embarks on Phase II. This Initial Study of the proposed project only considers Phase I and is based on information provided by the company.

At the Los Robles Cement Plant, the company manufactures cement by heating limestone (quarried on-site) with clay, sand, and iron oxides in a kiln. The kiln consists of a steel cylinder, lined with refractory brick to protect the steel from high temperatures. The kiln is supported on rollers and rotated along its axis (1 revolution per minute). The kiln is supported on an incline (0.5 inch per foot) so that raw materials, introduced into the raised end, travel toward the

lower end and that fuels, introduced at the lower end, release combustion gases, water vapor, and carbon dioxide toward the raised end. The fuels must produce temperatures in the kiln exceeding 3000 degrees Fahrenheit to heat the raw materials to the minimum 2600 degrees Fahrenheit required for production of quality cement. The total residence time of fuels in the kiln is 4.6 seconds at temperatures in excess of 2000 degrees Fahrenheit, thereby exceeding the present standard for incinerators of hazardous wastes. Waste industrial solvents will supplement coal, petroleum coke (or a combination of the two) as fuels for heating the kiln.

The waste industrial solvents to be tested will be common solvents originating from the painting, printing, and petrochemical industries. Lists of specific solvents to be tested (if available) appear on pages 25-28 of the Operation Plan and in an addendum dated December 9, 1981 submitted by the company as part of the permit application submitted to the DHS. Many of these waste solvents are classified as hazardous by the DHS.

The byproducts of combustion of the waste industrial solvents may appear in the stack gases, particulate emissions, or cement (clinker) produced in the kiln. The byproducts which may be of concern will be bound up in the clinker. Hazardous organic emissions will largely be destroyed by the operating conditions of the kiln (see pages 36-41, Attachment 4, Operation Plan). Particulate emissions are captured in a baghouse and recycled into the kiln for mixing with raw materials; some kiln dust contaminated with chlorides will be disposed on-site in a landfill.

The tolerances for the cement produced should control the quantities of contaminants in the clinker.

General Portland Inc. will be required to follow an emissions testing program. The testing program will involve source testing for emissions of criteria pollutants and organic by-products of combustion in the exhaust gas stream and analyses of the waste solvents and clinker product. Samples will be taken prior to waste incineration with the objective of establishing baseline emissions and any effects that waste incineration may have on these emissions. Samples will be taken over a two week period for each phase of the testing program.

To establish the destruction efficiency of the waste solvents, the analyses of the waste stream will be compared to the results from emissions testing.

Samples of the clinker product will be taken when waste is incinerated and will be analyzed to determine if any waste residues are in the clinker product.

6

2. Identification of Environmental Setting

The Los Robles Cement Plant is situated in the Mojave Desert near the intersection of the San Gabriel and Tehachapi Mountains (southern boundary of Kern County near Gorman on a portion of the Tejon Ranch). The plant is relatively remote; the nearest residence is more than five miles away (see attached map and page 34 of the Operation Plan).

3. Identification of Environmental Effects

(See attached checklist)

4. Discussion of Ways to Mitigate Significant Environmental Effects

(See attachment to checklist)

5. Compatibility with Existing Zoning

According to William Evans of the Kern County Planning Department, the Los Robles Cement Plant was established in 1966 when zoning for the area was unclassified. In the early 1970's, the area was zoned M-3 (Industrial) as it is today. The M-3 zoning is an allowable use, so no permit was required and few limitations exist. Kern County will not require a permit for the testing of waste solvents as supplementary fuels at the plant.

According to Melvin Krause of the Kern County Planning Department, a

new county general plan, which includes the land occupied by the plant, will become effective on April 1, 1982. In that plan, the land occupied by the plant will be designated 8.4 (Minerals and Petroleum). This designation will allow any mineral or petroleum production facilities excluding refineries. 7

6. Names of Persons Participating in Initial Study

Dennis Castrillo
Harry Freeman
Watson Gin
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Exhibit No. 14

Facility:	LOS ROBLES CEMENT PLANT Latitude 34° 49' 20" North Longitude 118° 45' 00" West Kern County California	HAZARDOUS WASTE FACILITY PERMIT Number: CAX 000010058 Effective Date: April 21, 1983
Operator:	GENERAL PORTLAND INC. P. O. Box 49026 Los Angeles, CA 90049	Termination Date: October 20, 1984

ATTACHMENT A

Hazardous Waste Facility Permit
Los Robles Cement Plant
General Portland Inc.
Latitude 34° 49' 20" North
Longitude 118° 45' 00" West
Kern County
California

I. DESCRIPTION OF FACILITY

GENERAL PORTLAND INC. (hereinafter "operator" and/or "owner"), operates a portland cement plant, known as the Los Robles Cement Plant, near Lebec, Kern County, California. The owner has applied to the California State Department of Health Services for a permit authorizing the operation of an Energy Recovery Facility at the Los Robles Cement Plant. The project involves the storage of waste industrial solvents and the use of these materials as supplemental fuels in the manufacture of cement. The use of these materials in this manner constitutes thermal "treatment" of waste. Accordingly, the California State Department of Health Services has jurisdiction to issue a permit authorizing the project subject to the following terms and conditions.

II. GENERAL CONDITIONS

1. General Responsibilities of Owner

The owner or operator shall comply with the provisions of the California Health and Safety Code, including Chapter 6.5 of Division 20, and with the Minimum Standards for Management of Hazardous and Extremely Hazardous Wastes (Chapter 30, Division 4,

Title 22, of the California Administrative Code). The following requirements set forth in Chapter 30, Division 4, Title 22, California Administrative Code, should be particularly noted:

(a) The owner or operator shall take the steps necessary in the operation of the facility to protect public health and safety, wildlife, domestic livestock, and the environment;

(b) The owner or operator shall allow the California State Department of Health Services or the local health agency to inspect the facility, take samples of wastes, and inspect pertinent records;

(c) The owner or operator shall maintain the qualified personnel and the equipment necessary to provide for the safe operation of the facility;

(d) The owner or operator shall notify the California State Department of Health Services of a proposed change in ownership of the facility, in the method of operation of the facility, or of proposed termination of operation of the facility 30 days prior to such event; and

(e) The operator shall report to the California State Department of Health Services, within 24 hours after occurrence, all accidents involving hazardous wastes which resulted in, or

could have resulted in, a hazard to public health and safety, wildlife, domestic livestock, or to the environment.

2. Records

The owner or operator shall file this permit at the facility and at his place of business.

3. Operation Plan

The operator shall comply with the operation plan and supplements submitted in accordance with Section 66376, Title 22, of the California Administrative Code.

4. Prohibited Acts

The owner or operator shall not do any of the following acts:

(a) Use hazardous wastes in violation of this permit;

(b) Employ processes not described in the application; or

(c) Make substantial modifications or additions to the facility the subject of this permit without the prior approval of the California State Department of Health Services.

5. Limitation

The owner or operator shall comply with the conditions of this permit and with any new or modified conditions which the Calfiornia State Department of Health Services deems necessary to protect public health or the environment. A new permit condition or a modification of an existing permit condition shall become effective on the date that written notice of such change is received by the owner or operator.

6. References and Terminology

All parts in the permit are identified by Roman numerals. The items set forth in each part shall apply to the owner, operator, and/or facility in addition to the items set forth in any preceding and/or following part of this permit. Unless explicitly stated otherwise, all cross-references to items in this permit shall refer only to items occurring within the same part. Further, the term "treat" as it appears in this document refers to the thermal treatment of wastes through their use as fuel in the kiln of a portland cement plant. The term "use" is also used to describe the proposed activity.

III. SPECIAL CONDITIONS

1. Restrictions on Supplemental Fuel Composition

(a) Approval of the Department of Health Services shall be required prior to burning any blended liquid waste which contains concentrations in excess of the following for the inorganic compounds listed below:

(1)	Halogens	3%
(2)	Sulfur	3%
(3)	Nitrogen	3%
(4)	Barium	5,000 ppm
(5)	Chromium	1,000 ppm
(6)	Lead	2,500 ppm

(b) Approval of the Department of Health Services shall be required prior to the burning of any blended liquid waste, listed on the list attached to this permit as Exhibit A ("Materials for Use as Supplemental Fuel"), which contains concentrations in excess of the following for the organic compounds listed below:

Compound	(Weight Percent)
Benzene	0.5
Phenol	10.0
Total aromatics	50.0
Polychlorinated biphenyl (PCB)	0.0050 (50 ppm)

(c) The heat of combustion of the blended waste fuel, burned, shall be 10,000 Btu per pound or greater.

2. Supplemental Fuel Usage Rate

(a) The supplemental fuel feed rate shall not exceed 1,200 gallons per hour or the equivalent of 25 percent of the total fuel heat input, whichever is the greater amount, without the prior approval of the California Department of Health Services.

(b) The rates of supplemental fuel injection and primary fuel consumption shall be measured and recorded continuously. These records shall be made available to the Department of Health Services or the Kern County Air Pollution Control District upon request.

3. Start-Ups, Shutdowns, and Upsets

Supplemental fuels shall not be injected into the kiln during periods of kiln start-up, shutdown, or process upset.

4. Combustion and Thermal Efficiency

(a) The kiln's exhaust system shall be equipped with continuous instrumentation to measure and to record concentrations of carbon monoxide and oxygen; the temperature in the feed end of the kiln shall also be recorded continuously.

(b) The instrumentation for the measurement of carbon monoxide, oxygen, and temperature described in Item 4 (a) above shall be calibrated on a daily basis. These calibrations shall be in accordance with the Kern County Air Pollution Control District's (or Air Resources Board's) procedures.

5. Supplemental Fuel Cutoff

The supplemental fuel system shall be equipped with an audible alarm which shall sound in the event the carbon monoxide detected by the analyzer exceeds a concentration of 1,000 ppm in the kiln's exit gas and shall have an automatic valve to shut off the flow of supplemental fuel to the kiln if the carbon monoxide concentration remains above 1,000 ppm for a period of more than three minutes.

6. Destruction Efficiency

A destruction and removal efficiency of 99.99 percent for the kiln burning the compounds on the list of "Materials for Use as of Supplemental Fuel" (Exhibit A) shall be demonstrated by either of the following means: (1) evaluating selected, generic, principal organic hazardous constituents (POHCs) or (2) using a tracer substance approved by the Department of Health Services, such as sulfur hexafluoride (SF_6), known to be more refractory than any of the compounds on the list of "Materials for Use as Supplemental Fuel".

7. Kiln Dust

Representative samples of kiln dust generated at the plant shall be collected weekly and analyzed for leachable, hazardous compounds in accordance with the California Assessment Manual for Hazardous Wastes and other appropriate analytical methods in accordance with a protocol approved by the Department of Health Services. Monthly shipments of weekly composite samples shall be sent to the California Department of Health Services. A final report on the results of the analyses shall be submitted to the Department by September 1, 1983. If the results of the analyses indicate that the kiln dust generated at the plant is a hazardous waste, General Portland shall prepare and submit appropriate applications seeking a variance or permit authorizing the disposal of the kiln dust on site at the Los Robles Cement Plant. The application for variance or permit shall be filed within six months of the effective date of this hazardous waste facility permit for the Los Robles plant.

8. Report of Test Burns

Issuance of a permit for the continued, full-scale use of waste fuels shall require submission of a report on the results of tests for the destruction and removal efficiency conducted pursuant to Item 6 above and shall include the following information:

(a) The chemical and physical characteristics of wastes used during the test(s);

(b) An analysis of representative samples of air emissions and waste dust produced during the tests;

(c) A summary of the key operating conditions for the kiln (i.e., draft pressure, temperature, and gas velocity) during the tests; and

(d) A summary of the results of the testing required by Item 6 above to comprise:

(1) Weight rate of waste fuel, coal, and kiln feed;

(2) Concentration (by weight) of the respective POHCs and total aromatics in the waste fuel;

(3) Volumetric flowrate of exhaust gas;

(4) Concentration (by volume) of POHCs in exhaust gas;

(5) Concentrations of benzene, carbon monoxide, oxygen, and carbon dioxide in the exhaust gas; and

(6) Concentrations of toxic substances in the waste dust per Section 66699 of the California Assessment Manual.

9. Control of Air Emissions

The facility shall be operated to minimize the release of all harmful and obnoxious gases. The facility shall comply with all applicable air emission requirements of the Kern County Air Pollution Control District.

10. Control of Waste Dust

Wind-transport of baghouse dust and water-migration of hazardous compounds in such dust shall be controlled. Waste dust which exhibits hazardous properties shall be properly managed as stipulated in provision 7 of this Section III on Special Conditions.

11. Sampling and Analyses of Emissions and Residues

Methods and procedures shall be as approved by the Department of Health Services and the Air Resources Board.

12. Inspections of Kiln and Associated Equipment

Daily: for leaks, spills, and fugitive emissions.

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13. Storage of Liquid Wastes

(a) Hazardous waste shall be stored in a manner that will prevent spills. A caution sign shall be posted and visible from any direction of access or view of hazardous waste stored in such enclosure. Wording of caution signs shall be in English, "Caution -- Hazardous Waste Storage Area -- Unauthorized Persons Keep Out", and Spanish, "Cuidado: Zona de Residuos Peligrosos. Prohibida la Entrada a Personas No Autorizadas".

(b) Each hazardous waste storage area shall have a continuous base that is impervious to the waste to be stored and shall be designed and constructed so that any surface water runoff or spills can be contained. The containment area shall be sufficient to hold 100 percent of the tankage contents plus rainfall equivalent to 24 hours of a maximum 25-year cycle of rainfall.

14. Use of Wastes in the Supplemental Fuel System

If incompatible wastes are mixed for purposes of use, the owner or operator shall control the mixing process in a manner which prevents hazards to the health and safety of the public or employees or hazards to domestic livestock or wildlife.

15. Storage of Samples

Storage of samples of waste solvent and waste dust shall be retained for a minimum of 60 days and shall be in accordance with the Department of Health Services' or Kern County Air Pollution Control District's procedures.

16. Wastes Prohibited

Hazardous wastes defined as extremely hazardous wastes in Sections 66064 and 66685, Title 22, California Administrative Code, shall not be handled at the facility without the express written approval of the California State Department of Health Services.

17. Nonpotable Water Supply

If an on-site water supply is used for controlling dust and fires, cleaning equipment, or other purposes, and does not meet all health standards for drinking water, all faucets or taps connected to that supply shall be clearly labeled in English, "Polluted -- Not Safe for Human Use", and Spanish, "Peligro, Contaminacion, No Usar".

18. Private Water Supply

If a private water supply is used at the facility, it shall meet all health standards for drinking water or all faucets or taps

connected to that supply shall be clearly labeled in English, "Polluted -- Not Safe for Human Use", and Spanish, "Peligro, Contaminacion, No Usar".

19. Warning Signs

Signs indicating that the facility, or the hazardous waste area of the facility, contains hazardous waste shall be erected at the facility. Wording of the signs shall be in English, "Caution -- Hazardous Waste Area -- Unauthorized Persons Keep Out", and Spanish, "Cuidado: Zona de Residuos Peligrosos. Prohibida la Entrada a Personas No Authorizadas".

20. Telephone or Radio Communications

A telephone or radio for summoning aid in the event of an emergency shall be in workable condition and available for immediate use by personnel working in the hazardous waste area of the facility.

21. Safety Showers

The owner or operator shall provide to personnel working in the hazardous waste area of the facility adequate numbers of safety showers. The safety showers shall be in workable condition and available for immediate use.

22. Eyewashes

The owner or operator shall provide to personnel working in the hazardous waste area of the facility adequate number of eyewashes. The eyewashes shall be in workable condition and available for immediate use.

23. First-Aid Kit

The owner or operator shall provide to personnel working in the hazardous waste area of the facility adequate numbers of industrial-type first-aid kits. The kits shall be maintained and available for immediate use.

24. Protective Clothing

The owner or operator shall provide to personnel working in the hazardous waste area of the facility adequate numbers of the following National Institute of Occupational Safety and Health (NIOSH) approved equipment if appropriate:

(a) Protective head gear and face masks;

(b) Chemically resistant apparel and gloves; and

(c) Self-contained breathing apparatus or respirators with approved cartridges.

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25. Warning Alarm System

If at any time there is a sole employee on the premises, the employee shall have immediate access to an alarm or other communication device capable of summoning external emergency assistance.

26. Fire Fighting Equipment

The owner or operator shall provide to personnel working in the hazardous waste area of the facility fire extinguishing provisions that are capable of combating small Class A and B fires.

27. Record Keeping and Reporting

The owner or operator shall:

(a) Require that a manifest be completed for all hazardous wastes accepted and send legible copies to the California State Department of Health Services on a monthly basis.

(b) Submit to the California State Department of Health Services by the last day of each month information on the hazardous wastes delivered to him during the previous month consisting of a legible copy of the completed manifest for each load of hazardous wastes accepted, and a report that summarizes the numbers of loads of hazardous wastes received. A copy of the

monthly operator report to the California Regional Water Quality Control Board may, with appropriate modifications, be used for the report.

IV. SAFETY, EQUIPMENT, AND EMERGENCY RESPONSE

1. Identification Number

The facility owner or operator shall have an identification number issued by the U. S. Environmental Protection Agency (EPA).

2. Notices

(a) If the owner or operator has arranged to receive hazardous waste from a foreign source, he shall notify the California State Department of Health Services in writing at least four weeks in advance of the date that the waste is expected to arrive at the facility. Notice of subsequent shipments of thx same waste from the same foreign source is not required.

(b) Before transferring ownership or operation of the facility duling its operating life, the owner or operator shall notify the new owner or operator in writing of the conditions of this document.

3. Analysis of Waste Fuel

(a) (1) Before the owner or operator treats or uses a particular type of hazardous waste for the first time, he shall obtain a detailed chemical and physical analysis of a representative sample of the waste. At a minimum, this analysis shall contain all the information which must be known to treat or use the waste in accordance with the conditions of this permit.

(2) The analysis may include data developed for other purposes, and existing published or documented data on the hazardous waste or on waste generated from similar processes.

(3) The analysis shall be repeated as necessary to ensure that it is accurate and up to date. At a minimum, the analysis must be repeated when the owner or operator is notified, or has reason to believe, that the process or operation generating the hazardous waste has changed.

(b) Upon the effective date of this permit, the owner or operator shall follow a written waste analysis plan which describes the procedures which will be used to comply with Item 3 (a). The plan shall be subject to approval by the California State Department of Health Services and shall be kept at the facility. At a minimum, the plan shall specify:

(1) The parameters for which each hazardous waste will be analyzed and the rationale for the selection of these parameters.

(2) The test methods which will be used to test for these parameters.

(3) The sampling method which will be used to obtain a representative sample of the waste to be analyzed. A representative sample may be obtained using a sampling method approved by the California State Department of Health Services.

(4) The frequency with which the initial analysis of the waste will be reviewed or repeated to ensure that the analysis is accurate and up to date.

(5) Where applicable, the methods which will be used to meet any additional waste analysis requirements for specific waste management methods as specified elsewhere in this document.

4. Security

(a) The owner or operator shall prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of the facility.

(b) The facility shall have an artificial or natural barrier which completely surrounds the active portion of the facility and which would prevent unauthorized entry.

5. Inspections

(a) The owner or operator shall inspect the facility for malfunctions and deterioration, operator errors, and discharges which may be causing -- or may lead to -- release of hazardous waste constituents to the environment or a threat to human health. The owner or operator shall conduct these inspections often enough to identify problems in time to correct them before they harm human health or the environment.

(b) (1) The owner or operator shall follow a written schedule for inspecting all monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment (such as dikes and sump pumps) that are important to preventing, detecting, or responding to environmental or human health hazards.

(2) The schedule shall be subject to approval by the California State Department of Health Services.

(3) The owner or operator shall keep this schedule at the facility.

(4) The schedule shall identify the types of problems (e.g., malfunctions or deterioration) which are to be looked for during the inspection (e.g., inoperative sump pump, leaking fitting, eroding dike, etc.).

(5) The frequency of inspection may vary for the items on the schedule. However, it shall be based on the rate of possible deterioration of the equipment and the probability of an environmental or human health incident if the deterioration or malfunction or any operator error goes undetected between inspections. Areas subject to spills, such as loading and unloading areas, shall be inspected daily when in use. At a minimum, the inspection schedule shall include the items and frequencies called for elsewhere in this document.

(c) The owner or operator shall remedy any deterioration or malfunction of equipment or structures which the inspection reveals on a schedule which shall be subject to approval by the California State Department of Health Services and which shall ensure that the problem does not lead to any environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action shall be taken immediately.

(d) The owner or operator shall record inspections in an inspection log or summary. He shall keep these records for at least

three years from the date of inspection. At a minimum, these records shall include the date and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions.

6. Personnel Training

(a) (1) Facility personnel shall successfully complete a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures the facility's compliance with the conditions of this document. The owner or operator shall ensure that this program includes all the elements described under Item 6 (a) (3).

(2) This program shall be directed by a person trained in hazardous waste management procedures and shall include instruction which teaches facility personnel hazardous waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed.

(3) At a minimum, the training program shall be designed to ensure that facility personnel are able to respond effectively to emergencies by familiarizing them with

emergency procedures, emergency equipment, and emergency systems, including where applicable:

(i) Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment;

(ii) Key parameters for automatic waste feed cutoff systems;

(iii) Communications or alarm systems;

(iv) Reponse to fires or explosions;

(v) Response to groundwater contamination incidents; and

(vi) Shutdown of operations.

(b) Facility personnel shall have successfully completed the program required in Item 6 (a) by the effective date of this document or within six months after the date of their employment or assignment to a facility, or to a new position at a facility, whichever is later. Employees hired after the effective date of this document shall not work in unsupervised positions until they have completed the training requirements of Item 6 (a).

(c) Facility personnel shall take part in an annual review of the initial training required in Item 6 (a).

(d) The owner or operator shall maintain the following documents and records at the facility:

(1) The job title for each position at the facility related to hazardous waste management, and the name of the employee filling each job;

(2) A written job description for each position listed under Item 6 (d) (1). This description may be consistent in its degree of specificity with descriptions for other similar positions in the same company location or bargaining unit, but shall include the requisite skill, education, or other qualifications, and duties of facility personnel assigned to each position;

(3) A written description of the type and amount of both introductory and continuing training will be given to each person filling a position listed under Item 6 (d) (1); and

(4) Records that document that the training or job experience required under Items 6 (a), (b), and (c) has been given to, and completed by, facility personnel.

(e) Training records on current personnel as required in Item 6 (d) (4) shall be kept until closure of the facility. Training records on former employees shall be kept for at least three years from the date the employee last worked at the facility. Personnel training records may accompany personnel transferred within the same company.

7. Ignitable, Reactive, or Incompatible Wastes

(a) The owner or operator shall take precautions to prevent accidental ignition or reaction to ignitable or reactive waste. This waste shall be separated and protected from sources of ignition or reaction. While ignitable or reactive waste is being handled, the owner or operator shall confine smoking and open flame to specially designed locations. "No Smoking" signs shall be conspicuously placed wherever there is a hazard from ignitable or reactive waste.

(b) The treatment or use of ignitable or reactive waste, and the mixture or commingling of incompatible wastes, or incompatible wastes and materials shall be conducted so that it does not:

(1) Generate extreme heat or pressure, fire or explosion, or violent reaction;

(2) Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health;

(3) Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;

(4) Damage the structural integrity of the device or facility containing the waste; or

(5) Through other like means threaten human health or the environment.

8. Maintenance and Operation of the Facility

The facility shall be maintained and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or nonsudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment.

9. Testing and Maintenance of Equipment

All facility communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, where required, shall be tested and maintained as necessary to ensure its proper operation in time of emergency.

10. Required Aisle Space

The owner or operator shall maintain aisle space as needed to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency.

11. Arrangements With Local Authorities

(a) Upon the effective date of this permit, the owner or operator shall attempt to make the following arrangements, as appropriate for the type of waste handled at the facility and the potential need for the services of these organizations:

(1) Arrangements to familiarize police, fire departments, and emergency response teams with the layout of the facility, properties of hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to roads inside the facility, and possible evacuation routes;

(2) Where more than one police and fire department might respond to an emergency, agreements designating primary emergency authority to a specific police and a specific fire department, and agreements with any others to provide support to the primary emergency authority;

(3) Agreements with state emergency response teams, emergency response contractors, and equipment suppliers; and

(4) Arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases at the facility.

(b) Where state or local authorities decline to enter into such arrangements, the owner or operator shall document the refusal in the operating record.

12. Purpose and Implementation of Contingency Plan

(a) Upon the effective date of this permit, the owner or operator shall have a contingency plan for the facility. The contingency plan shall be subject to approval by the California State Department of Health Services and shall be designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or nonsudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water.

(b) The provisions of the contingency plan shall be carried out immediately wherever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment.

13. Content of Contingency Plan

(a) The contingency plan shall describe the actions facility personnel shall take to comply with Items 12 and 16 in response to fires, explosions, or any unplanned sudden or nonsudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility.

(b) The plan shall describe arrangements agreed to by local police departments, fire departments, hospital contractors, and state and local emergency response teams to coordinate emergency services pursuant to Item 12.

(c) The plan shall list names, addresses, and phone numbers (office and home) of all persons qualified to act as emergency coordinator, and this list shall be kept up to date. Where more than one person is listed, one shall be named as primary emergency coordinator and others shall be listed in the order in which they will assume responsibility as alternates.

(d) The plan shall include a list of all emergency equipment at the facility, such as fire extinguishing systems, spill control equipment, communications and alarm systems, internal and external, and decontamination equipment, where this equipment is required. This list shall be kept up to date. The plan shall include the location and description of each item on the list, and a brief outline of its capabilities.

(e) The plan shall include an evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan shall describe signal(s) to be used to begin evacuation routes, and alternate routes (in cases where the primary routes could be blocked by releases of hazardous wastes or fires).

14. Copies of Contingency Plan

A copy of the contingency plan and all revisions to the plan shall be:

(a) Maintained at the facility; and

(b) Submitted to the California State Department of Health Services and to all local police departments, fire departments, hospitals, and state and local emergency response teams that may be called upon to provide emergency services.

15. Amendment of Contingency Plan

The contingency plan shall be reviewed, and immediately amended, if necessary, whenever:

(a) Applicable regualtions are revised,

(b) The plan fails in an emergency,

(c) The list of emergency coordinators changes, or

(d) The list of emergency equipment changes.

16. Emergency Coordinator

At all times, there shall be at least one employee either on the facility premises or on call (i.e., available to respond to an emergency by reaching the facility within a short period of time) with the responsibility for coordinating all emergency response measures. This emergency coordinator shall be thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the location and activities at the facility, the location and characteristics of waste handled, the location of all records within the facility, and the facility layout. In addition, this person shall have the authority to commit the resources needed to carry out the contingency plan.

17. Emergency Procedures

(a) Whenever there is an imminent or actual emergency situation, the emergency coordinator (or his designee when the emergency coordinator is on call) shall:

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(1) Immediately activate internal facility alarms or communication systems, where applicable, to notify all facility personnel;

(2) Immediately notify appropriate state or local agencies with designated response roles if their help is needed; and

(3) Notify the California State Department of Health Services by telephone or telegraph within 24 hours of occurrence.

(b) Whenever there is a release, fire, or explosion, the emergency coordinator shall immediately identify the character, exact source, amount, and a real extent of any released materials. This may be done by observation or review of facility records or manifests and, if necessary, by chemical analysis.

(c) Concurrently, the emergency coordinator shall assess possible hazards to human health or the environment that may result from the release, fire, or explosion. This assessment shall consider both direct and indirect effects of the release, fire, or explosion (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated or the effects of any hazardous surface water runoff from water or chemical agents used to control fire and heat-induced explosions).

(d) If the emergency coordinator determines that the facility has had a release, fire, or explosion which could threaten human health, or the environment outside the facility, the findings shall be reported as follows:

(1) The emergency coordinator shall immediately notify either the government official designated as the on-scene coordinator for that geographical area (in the applicable regional contingency plan under Part 1510, Title 40, Code of Federal Regulations), or the National Response Center (using their 24-hour toll free number: 800/424-8802). The report shall include:

(i) Name and telephone number of reporter;

(ii) Name and address of facility;

(iii) Time and type of incident (e.g., release, fire);

(iv) Name and quantity of material(s) involved to the extent known;

(v) The extent of injuries, if any; and

(vi) The possible hazards to human health, or the environment, outside the facility.

(2) If his assessment indicates that evacuation of local areas may be advisable, appropriate local authorities shall be notified immediately. The emergency coordinator shall be available to help appropriate officials decide whether local areas should be evacuated.

(e) During an emergency, the emergency coordinator shall take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous waste at the facility. These measures shall include, where applicable, stopping processes and operations, collection and containing released waste, and removing or isolating containers.

(f) If the facility stops operations in response to a fire, explosion, or release, the emergency coordinator shall monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

(g) Immediately after an emergency, the emergency coordinator shall provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.

(h) The emergency coordinator shall ensure that, in the affected area(s) of the facility:

(1) No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and

(2) All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed.

(i) The owner or operator shall notify the California State Department of Health Services and local authorities that the facility is in compliance with Item 16 (h) before operations are resumed in the affected area(s) of the facility.

(j) The owner or operator shall note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Within 30 days after the incident, he shall submit a written report on the incident to the California State Department of Health Services. The report shall include:

(1) Name, address, and telephone number of the owner or operator;

(2) Name, address, and telephone number of the facility;

(3) Date, time, and type of incident (e.g., fire, explosion);

(4) Name and quantity of material(s) involved;

(5) The extent of injuries, if any;

(6) An assessment of actual or potential hazards to human health or the environment, where this is applicable; and

(7) Estimated quantity and disposition of recovered material that resulted from the incident.

V. RECORD KEEPING

1. Operating Record

(a) The owner or operator shall keep a written operating record at the facility.

(b) The following information shall be recorded, as it becomes available, and maintained in the operating record for a period of five years at the facility:

(1) A description and the quantity of each hazardous waste received;

(2) Records and results of waste analyses and trial tests performed;

(3) Summary reports and details of all incidents that require implementing the contingency plan;

(4) Records and results of inspections (except these data need be kept only three years); and

(5) Monitoring, testing, or analytical data where required.

2. Availability, Retention, and Disposition of Records

(a) All records, including plans, required by this permit shall be furnished upon request, and made available at all reasonable times for inspections, by any officer, employee, or representative of the California State Department of Health Services or the Kern County Air Pollution Control District.

(b) The retention period for all records required in this permit is extended automatically during the course of any unresolved enforcement action regarding the facility or as requested by the California State Department of Health Services.

3. Annual Report

The owner or operator shall prepare and submit a single copy of an annual report to the California State Department of Health Services by March 1 of each year beginning March 1, 1984. The annual report shall cover facility activities during the previous calendar year and shall include the following information:

(a) The EPA identification number, name, and address of the facility;

(b) The calendar year covered by the report;

(c) A description and the quantity of each hazardous waste the facility received during the year;

(d) The method of treatment, storage, or disposal for each hazardous waste;

(e) Monitoring data where required;

(f) The most recent closure cost estimate; and

(g) The certification signed by the owner or operator of the facility or his authorized representative.

4. Additional Reports

In addition to submitting the annual report required in Item 3, the owner or operator shall also report to the California State Department of Health Services:

(a) Releases, fires, and explosions; and

(b) Termination of operation under Part II, Item 2, of the permit.

VI. OFF-SITE FACILITY

1. Analysis of Waste Fuel

(a) The owner or operator shall follow a written waste analysis plan which shall be subject to approval by the California State Department of Health Services and which shall specify the waste analyses that hazardous waste generators have agreed to supply.

(b) The waste analysis plan required in Item 1 (a) shall also specify the procedures which will be used to inspect and, if necessary, analyze each movement of hazardous waste received at the facility to ensure that it matches the identity of the waste designated on the accompanying manifest. At a minimum, the plan must describe:

(1) The procedures which will be used to determine the identity of each movement of waste managed at the facility; and

(2) The sampling method which will be used to obtain a representative sample of the waste to be identified, if the identification method includes sampling.

(c) The owner or operator shall inspect and, if necessary, analyze each hazardous waste movement received at the facility to determine whether it matches the identity of the waste specified on the accompanying manifest.

2. Use of Manifest

The owner or operator, or his agent shall:

(a) Require that a manifest be completed for all hazardous waste accepted;

(b) Inspect wastes before accepting them to ensure that the delivered waste has essentially the same general properties as identified by the generator on the manifest;

(c) Complete the appropriate section of the manifest;

(d) Sign and date each copy of the manifest to certify that the hazardous waste covered by the manifest was received;

(e) Note any significant discrepancies in the manifest on each copy of the manifest;

(f) Immediately give the transporter at least one copy of the signed manifest;

(g) Send legible copies of all completed hazardous waste manifests to the California State Department of Health Services on a monthly basis in conformance with Section 66550, Title 22, California Administrative Code;

(h) Within 30 days after delivery, send a copy of the manifest to the generator; and

(i) Retain at the facility a copy of each manifest for at least three years from the date of delivery.

3. Manifest Discrepancies

Upon discovering a significant discrepancy between the quantity or type of hazardous waste designated on the manifest and the quantity or type of hazardous waste a facility actually receives, the owner or operator shall attempt to reconcile the discrepancy with the

waste generator or transporter (e.g., with telephone conversation). A significant discrepancy in quantity for bulk waste would be a variation greater than ten percent in weight. A significant discrepancy in type is an obvious difference which can be discovered by inspection or waste analysis such as waste solvent substituted for waste acid or toxic constituents not reported on the manifest. If the facility can accept the waste after its actual identity is revealed, the owner or operator may accept the waste. If the facility cannot accept the waste, the owner or operator shall immediately notify the California State Department of Health Services of that fact, identify the transporter and generator of the waste, and refuse to accept the waste. If the owner or operator can accept the waste, he shall note on the copy of the manifest which he submits to the California State Department of Health Services and on the copy which he retains, how the discrepancy was resolved. If the discrepancy is not resolved within 15 days after receiving the waste, the owner or operator shall immediately submit to the California State Department of Health Services a letter describing the discrepancy and attempts to reconcile it, and a copy of manifest at issue.

4. Annual Report

The owner or operator shall prepare an annual report (as described elsewhere in this permit) which shall include:

(a) The EPA identification number of each hazardous generator from which the facility received a hazardous waste during the year; for imported shipments, the report shall give the name and address of the foreign generator; and

(b) A description and the quantity of each hazardous waste, which the facility received during the year, listed by EPA identification number of each generator.

5. Unmanifested Waste Report

If the facility accepts for treatment, storage, or disposal any hazardous waste from an off-site source without an accompanying manifest, and if the waste is not excluded from the manifest requirement, then the owner or operator shall prepare and submit a single copy of a report to the California State Department of Health Services within 15 days after receiving the waste. The report shall include the following information:

(a) The EPA identification number, name, and address of the facility;

(b) The date the facility received the waste;

(c) The EPA identification number, name and address of the generator and the transporter, if available;

(d) A description and the quantity of each unmanifested hazardous waste the facility received;

(e) The certification signed by the owner or operator of the facility or his authorized representative; and

(f) A brief explanation of why the waste was unmanifested if known.

VII. STORAGE TANKS

1. Design

(a) Each storage tank shall be situated within a spill containment structure capable of holding the contents of the largest tank within the structure and of providing sufficient freeboard.

(b) Storage tanks shall be constructed of materials which are compatible with the wastes to be contained or shall be protected with liners which are compatible with those wastes.

(c) New, replacement, and repaired storage tanks and their appurtenances shall be certified to be structurally sound and of adequate construction by an engineer registered in California prior to use.

(d) Each storage tank shall be individually marked with the internationally recognized hazard identification system placards developed by the National Fire Prevention Association (NFPA).

(e) Valves on the storage tanks shall be kept locked when the facility is unattended.

(f) The storage tanks shall be as required by the Kern County Air Pollution Control District: of fixed-roof construction with internal floating roofs, or equivalent; with a continuous base that is impervious to the waste to be contained; and designed and constructed so that any surface water runoff or spills can be contained.

2. Operation

(a) The hazardous waste storage tanks shall comply with Part III, Item 13 (a) and (b) of this permit.

(b) Hazardous waste or treatment reagents shall not be placed in a storage tank if they could cause the storage tank's inner liner to rupture, leak, corrode, or otherwise fail before the end of its intended life.

(c) If hazardous waste is continuously fed into a storage or feed tank, the storage or feed tank shall be equipped with a means to stop this inflow (e.g., a waste feed cutoff system).

3. Inspections

(a) The owner or operator of a storage tank must inspect, if applicable:

(1) Discharge control equipment (e.g., waste feed cutoff systems and drainage systems), at least once each operating day, to ensure that it is in good working order;

(2) Data gathered from any storage tank's monitoring equipment (e.g., pressure liquid level and/or temperature gauges), at least once each operating day, to ensure that the tank is being operated according to its design;

(3) The construction materials of the storage tank, at least weekly, to detect corrosion or leaking of fixture or seams; and

(4) The construction material of, and the area immediately surrounding, discharge confinement structure (e.g., dikes), at least weekly, to detect erosion or obvious signs of leakage (e.g., wet spots or dead vegetation).

4. Termination of Operation Under the Permit

Upon termination of operation under the permit, all hazardous wastes and hazardous waste residues shall be removed from the storage tanks, discharge control equipment, and discharge confinement structures unless a permit for further operation is received from the California Department of Health Services.

5. Ignitable or Reactive Waste

(a) Ignitable or reactive waste shall be stored in such a way that it is protected from any material or conditions which may cause the waste to ignite or react; or

(b) If the owner or operator treats or stores ignitable or reactive waste in covered tanks, he shall comply with NFPA's buffer zone requirements for tanks, contained in Tables 2-1 through 2-6 of the "Flammable and Combustible Code -- 1977".

6. Incompatible Wastes

(a) Incompatible wastes, or incompatible wastes and materials, shall not be placed in the same storage tank, unless Item 7 (b), Part III, of this permit is complied with.

28-337 O - 84 - 12

(b) Hazardous waste shall not be placed in an unwashed storage tank which previously held an incompatible waste or material.

VIII. THERMAL TREATMENT OF HAZARDOUS WASTE AS FUEL IN THE CEMENT KILN

1. Operation

Before adding hazardous liquid waste, the owner or operator shall bring the kiln to steady state (normal) conditions of operation -- including steady state operating temperature -- using primary fuel or other means.

2. Analysis of Supplemental Fuel

The owner or operator shall analyze sufficiently any supplemental fuel which he has not used previously as fuel in the kiln to enable him to establish steady state (normal) operating conditions (including supplemental fuel rate and primary fuel rate). An abnormal (or upset) condition shall be considered to occur when the carbon monoxide in the kiln exit gas is excessive, the kiln's oxygen or temperature is too low, or the kiln loses its negative pressure (draft). At a minimum, the analysis shall determine:

(a) Heating value of the waste;

(b) Halogen content and sulfur content in the waste; and

(c) Concentrations in the waste of arsenic and heavy metals, to include barium, cadmium, chromium, iron, lead, selenium, titanium, vanadium, and zinc, unless the owner or operator has documented proof that those elements are not present.

3. Monitoring and Inspections

(a) The owner or operator shall conduct, as a minimum, the following monitoring and inspections when using hazardous waste:

(1) Existing instruments (e.g., those measuring supplemental fuel feed, primary fuel feed, treatment process temperature, and relevant process flow and level controls) which relate to temperature shall be monitored. Appropriate corrections to maintain steady state or other appropriate kiln operating conditions shall be made immediately either automatically or by the operator.

(2) The supplemental fuels system shall be inspected at least daily for leaks, spills, and all emergency shutdown controls; and system alarms shall be checked to ensure proper operation.

4. Termination of Operation Under the Permit

Upon termination of operation under the permit, the owner or operator shall remove all hazardous wastes and hazardous waste

residues (including, but not limited to, ash) from the supplemental fuels system unless a permit for further operation is received from the California State Department of Health Services.

5. Open Burning and Detonation

Open burning and detonation of hazardous waste shall be prohibited unless specifically approved in writing by the California State Department of Health Services.

VIII. FINANCIAL RESPONSIBILITY AND CLOSURE

The owner or operator shall comply with all financial responsibility and facility closure requirements of the California Department of Health Services when implemented.

HAZARDOUS WASTE FACILITY PERMIT

Number: CAX 000010058

Effective Date: April 21, 1983

Termination Date: October 20, 1984

Pursuant to Section 25200.5 of the California Health and Safety Code, this Hazardous Waste Facility Permit is hereby granted to GENERAL PORTLAND INC., subject to the conditions set forth in Attachment A which by this reference is incorporated herein.

Richard P. Wilcoxon
Acting Deputy Director
Toxic Substances Control Division

Exhibit A

Materials for Use as Supplemental Fuel

Acetone
Isoamyl alcohol
Isoamyl acetate
Tert-amyl alcohol

Benzene
Isobutanol
sec-Butanol
tert-Butanol
n-Butanol
Butyl acetate
n-Butyl benzene
Butyl cellosolve
Butyl ether

Cellosolve
Chlorobenzene
Cumene
Cyclohexanol
Cyclohexanone
Cyclohexane
Cyclopentane
Cyclopentanone
p-Cymene

Decane
Decyl benzene
Diacetone alcohol
Dibutyl phthalate
Diethyl phthalate
Diethyl benzene
Diethylene glycol hexyl ether
Diethylene glycol monobutyl ether
Diethylene glycol monoethyl ether
Diethylene glycol monomethyl ether
Diisobutyl phthalate
Diisopropylbenzene
1,2-Dimethoxyethane
Dimethyl phthalate
Dimethyl isophthalate
Dimethyl sebacate
Dimethyl carbonate
2,6-Dimethyl-4-heptanone
2,3-Dimethylbutane
Dodecane
Dipropylene glycol methyl ether

Ethanol
B-Ethoxyethyl acetate
2-Ethyl-1-butanol
2-Ethyl-1-hexanol
Ethyl acetate
Ethyl benzene
Ethyl butanol
Ethyl butyrate
Ethyl ether
Ethyl formate
Ethylene glycol monobutyl ether
Ethylene glycol monoethyl ether
Ethylene glycol monomethyl ether
Ethylene glycol diacetate
Ethylene glycol monolaurate
Ethylene glycol monooleate
Ethylene glycol hexyl ether
Ethylene glycol phenyl ether

Glyceryl diacetate
Glyceryl triacetate
Glyceryl tributyrate

Heptane
3-Heptanone
Hexadecane
Hexane
n-Hexyl benzene
2-Hydroxyethyl acetate

Isophorone

Mesityl oxide
Methanol
2-Methoxyethyl acetate
Methyl acetate
2-Methyl-2-butanol
Methyl isobutyl ketone
Methyl ethyl ketone
Methyl ethyl benzene
Methyl isobutyl ketone
Methylcyclohexane
Methylene chloride
3-Methylpentane
a-Methylstyrene

Neohexane

n-Octadecane
Octane
2-Octanone
Octyl benzene

Phenol
Pentane
Pentanone
3-Pentanone
n-Pentyl acetate
Polypropylene glycol monobutyl ether
Propanol
1-Propanol
2-Propanol
Isopropanol
Propyl acetate
Isopropyl acetate
Propyl benzene
Isopropyl ether
Propylene glycol methyl ether
Propylene glycol propyl ether
Propylene glycol monolaurate
Propylene glycol monooleate

Styrene

Tetrachloroethylene
Tetrahydrofuran
Tetrahydrofuryl acetate
Tetrahydrofuryl alcohol
Tetrahydro-2-methylfuran
Toluene
Tributyl phosphate
1,1,1-Tricholoroethane
Tricholoroethylene
Triethyl phosphate
Triethylene glycol diacetate
1,2,4 Trimethylbenzene
2,2,4 Trimethylpentane

m-Xylene
o-Xylene
p-Xylene

GENERIC COMPOUNDS

Aromatic naptha
Distillate fuel oil
Gasoline
Kerosene
Lacquer thinner
Mineral spirits
Paint thinner
Petroleum naptha
Stoddard solvents
Turpentine
White gas

April 1982 Original (on file of record)

NOTICE OF DETERMINATION

TO: X Secretary for Resources
1416 Ninth Street, Room 1311
Sacramento, California 95814

or

___ County Clerk
County of _____

FROM: (Public Agency) Permits, Surveillance & Enforcement Section, ~~Hazardous~~ Waste Mgmt. Branch, Dept. of Health Services

SUBJECT: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

Energy Recovery Facility at the Los Robles Cement Plant
Project Title

82022555 | Mohinder Sandhu | (209) 291-6676
State Clearinghouse Number (If submitted to Clearinghouse) | Contact Person | Telephone Number

Lebec, Kern County, California
Project Location

Project involves testing the use of waste industrial solvents as supplementary fuels in the manufacture of cement. Project proponent submitted application to DHS for a temporaty Hazardous Waste Facility Permit to allow the use of waste solvents classified by DHS as hazardous
Project Description

This is to advise that the California State Department of Health Services (Lead Agency or Responsible Agency) has approved the above described project and has made the following determinations regarding the above described project:

1. The project __ will, X will not, have a significant effect on the environment.

2. ___ An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.

   X A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.

   The EIR or Negative Declaration and record of project approval may be examined at:

   _____

   _____.

3. Mitigation measures X were, ___ were not, made a condition of the approval of the project.

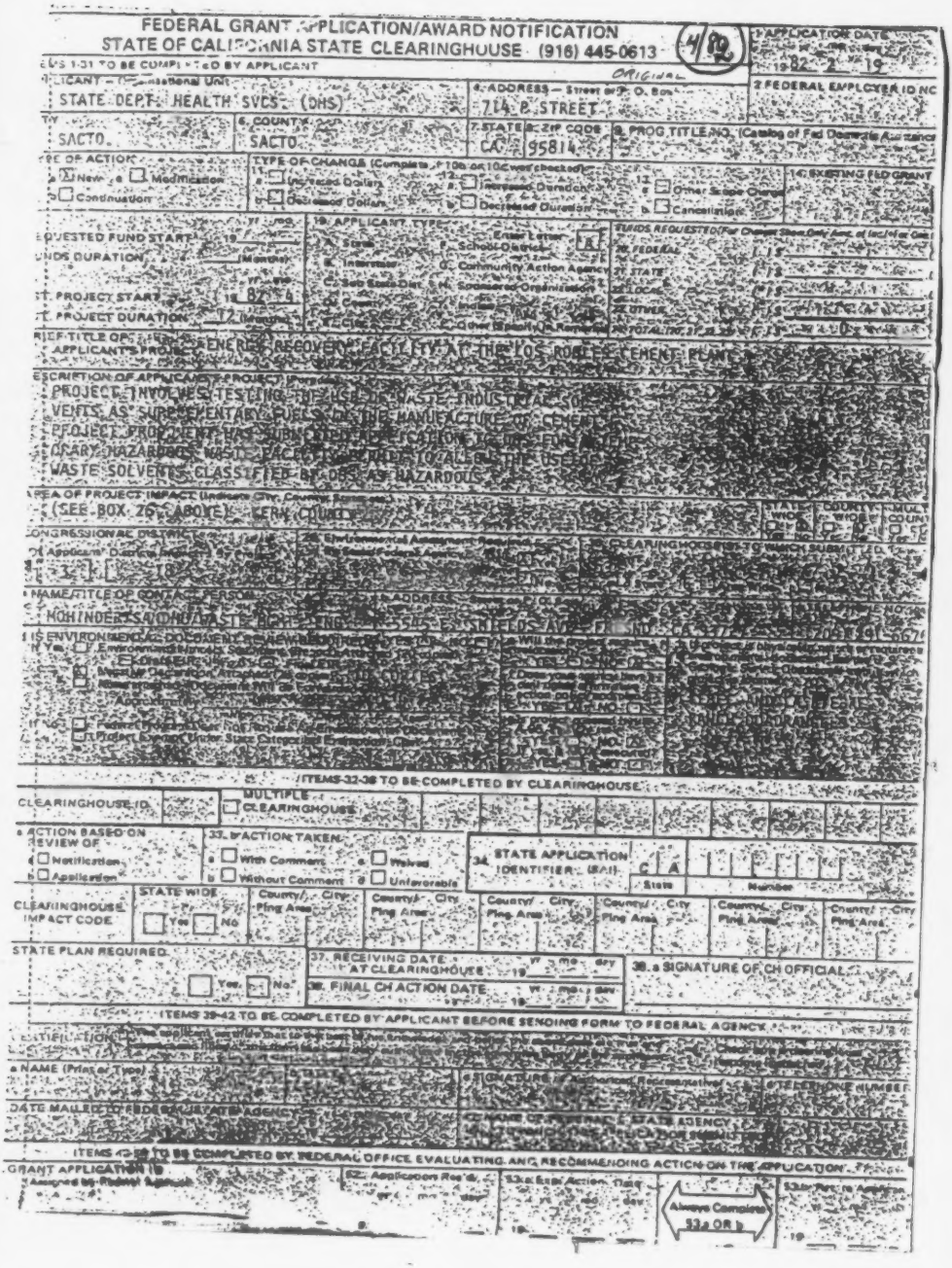
4. A statement of Overriding Considerations ___ was, X was not, adopted for this project.

Date Received for Filing _____

William T Topping
Signature

Acting Chief
Title

April 20, 1982
Date Filed



FEDERAL GRANT APPLICATION/AWARD NOTIFICATION
STATE OF CALIFORNIA STATE CLEARINGHOUSE (916) 445-0613

4/82

ORIGINAL

1 APPLICATION DATE: 1982 2 19

ITEMS 1-31 TO BE COMPLETED BY APPLICANT

APPLICANT — Organizational Unit: STATE DEPT. HEALTH SVCS. (DHS)

4. ADDRESS — Street or P. O. Box: 714 P STREET

2 FEDERAL EMPLOYER ID NO

5. CITY: SACTO. 6. COUNTY: SACTO 7. STATE: CA 8. ZIP CODE: 95814

9. PROG TITLE NO. (Catalog of Fed Domestic Assistance)

TYPE OF ACTION: a. ☒ New b. ☐ Continuation c. ☐ Modification

TYPE OF CHANGE (Complete a, b, 10b or 10c, and 12 if checked): 11 a. ☐ Increase Dollars b. ☐ Decreased Dollars; 12 a. ☐ Increased Duration b. ☐ Decreased Duration; 12 c. ☐ Other Scope Change d. ☐ Cancellation

14. EXISTING FED GRANT

REQUESTED FUND START: 19 mo. yr.

FUNDS DURATION: Months

ST. PROJECT START: 19 82 04

ST. PROJECT DURATION: 12 Months

10. APPLICANT TYPE: Enter Letter [A] — A. State; B. Interstate; C. Sub State Dist.; D. County; E. City; F. School District; G. Community Action Agency; H. Soil or Water Conservation Dist.; I. Other Specify in Remarks

FUNDS REQUESTED (For Change Show Only Amt. of Incr. or Decr.)

16. FEDERAL $

17. STATE $

18. LOCAL $

19. OTHER $

20. TOTAL (17, 18, 19) $ 0

BRIEF TITLE OF APPLICANT'S PROJECT: ENERGY RECOVERY FACILITY AT THE LOS ROBLES CEMENT PLANT

DESCRIPTION OF APPLICANT'S PROJECT:
PROJECT INVOLVES TESTING THE USE OF WASTE INDUSTRIAL SOLVENTS AS SUPPLEMENTARY FUELS IN THE MANUFACTURE OF CEMENT.
PROJECT PROPONENT HAS SUBMITTED APPLICATION TO DHS FOR TEMPORARY HAZARDOUS WASTE FACILITY PERMIT TO ALLOW THE USE OF WASTE SOLVENTS CLASSIFIED BY DHS AS HAZARDOUS.

AREA OF PROJECT IMPACT (Indicate City, County, Region, etc.): (SEE BOX 20 ABOVE) KERN COUNTY

STATE WIDE | COUNTY WIDE | MULTI COUNTY

CONGRESSIONAL DISTRICTS: a. Applicant 32 b. Project 18

26. Environmental Assessment

27. CLEARINGHOUSE(S) TO WHICH SUBMITTED

NAME/TITLE OF CONTACT PERSON: MOHINDER S. CHUGHA

ADDRESS: 5515 E. LANSING AVE. FRESNO CA 93727

TELEPHONE NO.: (209) 251-0671

IS ENVIRONMENTAL DOCUMENT REVIEW REQUIRED BY STATE OR LOCAL PROCESS?
a. ☐ Yes — Environmental Impact Statement (EIS) ☐ Negative Declaration ☐ Assessment (EA) ☐ Exempt
b. ☒ No — Program is not on list ☐ Applicant certifies project is exempt

Will the project affect: a. Historic Sites? NO b. Wilderness Areas? NO c. Coastal Zone? NO

Is the project controversial? YES NO

Has an EIS been prepared? YES NO

If Yes: a. ☐ Federal EIS b. ☐ Project Exempt Under State Criteria

ITEMS 32-38 TO BE COMPLETED BY CLEARINGHOUSE

CLEARINGHOUSE ID | MULTIPLE ☐ CLEARINGHOUSE

32. ACTION BASED ON REVIEW OF: a. ☐ Notification b. ☐ Application

33. ACTION TAKEN: a. ☐ With Comment b. ☐ Without Comment c. ☐ Waived d. ☐ Unfavorable

34. STATE APPLICATION IDENTIFIER: (SAI): C A — State — Number

CLEARINGHOUSE IMPACT CODE: STATE WIDE ☐ Yes ☐ No

County/City/Reg. Area | County/City/Reg. Area | County/City/Reg. Area | County/City/Reg. Area | County/City/Reg. Area

STATE PLAN REQUIRED: ☐ Yes ☐ No

37. RECEIVING DATE AT CLEARINGHOUSE: 19 mo. day

38. FINAL CH ACTION DATE: 19 mo. day

38.a SIGNATURE OF CH OFFICIAL

ITEMS 39-42 TO BE COMPLETED BY APPLICANT BEFORE SENDING FORM TO FEDERAL AGENCY

CERTIFICATION: To the best of my knowledge and belief, all data in this application are true and correct. The document has been duly authorized by the governing body of the applicant and the applicant will comply with the attached assurances if the assistance is awarded.

a. NAME (Print or Type)

b. SIGNATURE of Authorized Representative

c. TELEPHONE NUMBER

DATE MAILED TO FEDERAL AGENCY

c. NAME OF FEDERAL AGENCY

d. STATE AGENCY FOR SUBMISSION

ITEMS 43-53 TO BE COMPLETED BY FEDERAL OFFICE EVALUATING AND RECOMMENDING ACTION ON THE APPLICATION

GRANT APPLICATION ID: Assigned by Federal Agency

52. Application Rec'd: mo. day

53.a Estd. Action Date: 19 mo. day

Always Complete 53.a OR b

53.b. Reject Application: 19

Groundwater Decontamination Systems, Inc.
12 Industrial Park, Waldwick, N.J. 07463
201-796-6938 TELEX 130547 BIOCRAFT ELPK

October 25, 1983

Miss Brenda Pulley
Small Business Sub Committee for
Energy, Environment and Safety
House Annex 2
Room 369
Washington, D.C. 20515

Dear Miss Pulley,

Per your request, enclosed for your information is a copy of a letter which I sent to Mr. Donald Ehreth, Director, Office of Environmental Engineering and Technology, U.S.E.P.A., 401 M Street,S.W., Washington, D.C. 20460 on June 9, 1983. The letter resulted from a visit I had in Washington, D.C. on May 16, 1983 with Mr. Ehreth and his staff.

The purpose of my visit was to discuss avenues the government (U.S.E.P.A.) could pursue with the private business sector in order to raise funds to finance government research. The U.S.E.P.A. need for such funds was as a result of budgetary cutbacks in their research efforts.

As I mentioned in my telephone conversation with you, in my dealings with U.S.E.P.A. personnel, I have found them to be most cooperative. However, I am still without a demonstration site to prove our technology to the government decision makers.

I would like these letters to be included as testimony in the record of your sub committee hearing.

Very truly yours,

Joseph Kelly Mahon

Joseph Kelly Mahon
National Sales Manager

JKM:em
Enc.

Environmental Communication Systems, Inc.

12 Industrial Park, Guttenberg, N.J. 07093

201-796-8938 TELEX 130547 BIOCRAFT ELPK

June 9, 1983

Mr. Donald J. Ehreth - W615
Acting Director
Office of Environmental Engineering & Technology
U.S.E.P.A.
401 M Street S.W.
Washington, D.C. 20460

Dear Don,

Thank you for taking the time to exchange ideas with me during my visit to your office on May 16, 1983.

As we discussed, your task in trying to get the private sector to fund environmental research as a result of your research budget cuts is a difficult one.

Let me reiterate once more, that unless there is government enforcement of the laws which are already in existence concerning the cleanup of toxic and hazardous waste, corporate management will turn to other immediate priorities. Spending money on unproductive work is frowned upon in the private sector. Without strict regulation on the part of government, the cleaning up of hazardous waste is foreign to the corporate mind, as well as unproductive. Research is even more unproductive, particularly in areas that stand no chance of returning a profit or an increased stock dividend to a corporate manager or a shareholder.

Once the private sector recognizes that government is intent on enforcement, then your task of raising funds through the private sector will become somewhat easier. The private sector at that time might well decide they could assist the public interest by paying for environmental protection, rather than making rich men of their lawyers. The individual I work for did just that. As I explained to you during our visit, my employer spent well over 1 million dollars to develop a process to clean up his contaminated plant site rather than engaging in a long and drawn out legal battle with government. He shouldered his responsibility and did something about it. To date, generally speaking, the private sector has not reacted as my employer did.

When the private sector reacts responsibly, government should be smart enough to grasp the opportunity to get more cooperation from the private sector. Government recognition of those responsible people within the private sector is imperative. What do I mean? My employer developed a cost effective, as well as an effective process for cleaning up his contaminated plant site. The N.J. State Government approved the operation

of the process on the plant site. The federal E.P.A., your employer, has had the process evaluated by your consultants and by your laboratories. My understanding is that our process survived the scrutiny with "flying colors", yet the E.P.A. will not recommend the process for the cleanup of similar sites. Don, my employer, in a manner of speaking, funded your research for well over a million dollars, yet is unable to get your employer to recommend the research results. I propose that if the E.P.A. wants the private sector to fund environmental research, as my company has, the E.P.A. will have to change its present position with regard to bringing recognition to the results of the research effort. When recognition deserved is received, then I believe others in the private sector will be only too happy to jump on the bandwagon. After all, all people like to be thanked when effort is extended. It is a phenomenon common to both the private sector and government. It is common to human nature. Do you agree?

Again Don, it was a pleasure meeting with you and your staff. I wish you success in your fund raising efforts. If I can be of any assistance please contact me.

Very truly yours,

Joseph Kelly Mahon

Joseph Kelly Mahon
National Sales Manager

JKM:ca

SUMMARY OF RECOMMENDATIONS BY WITNESSES AT
ALTERNATIVE TECHNOLOGIES HEARING
October 27, 1983

PERMIT PROCEDURE

1. Set up a task force such as Governor Brown of California established:
   Governor's Office of Permit Assistance
   a. Provide guidelines and information to those applying for operating permits.
   b. Bring all the regulatory agencies together to inform the permit applicant what is required of him from each agency.
   c. This prevents:
      i. "Run around" from office to office for applicant.
      ii. Provides a uniform attempt to interpret the regulations.

2. Permit application forms need to be tailored to the method of treatment. (For example, a witness with a new technology testified that he had been given landfill application forms yet his method of treatment was not even similar to land-filling.)

3. Reduce Excessive Delays - there are excessive delays in the review and permit procedures. There is a backlog of approximately 9,000 permit applications. EPA representatives attribute these delays in part to a lack of skilled hydrogeologists and chemical engineers. (In 1981 one permit was issued. In 1982 four permits were issued. In 1983, though budgeted for 750 only 109 permits were issued.)

4. Common goals to be established - Witnesses testified that they have experienced a lack of coordination from within EPA programs. EPA programs need to have common goals.

5. Provide a more specific definition of treatment. One witness suggested that the definition must not be allowed to be a "semantical dodge" similar to that which currently exists for recycling. The definition should be amended to place primary emphasis on the extent to which a given method can demonstrate a permanent reduction or elimination of hazards associated with the waste through a biological, chemical or physical transformation or containment.

RESEARCH AND DEVELOPMENT

1. Establish Research and Development priorities and seek to implement them effectively.

2. Establish a central office contact at EPA for new ideas and related questions and problems. Provide information about this office to the public and all EPA employees so they can promptly direct inquiries to this office.

RESEARCH AND DEVELOPMENT cont'd

3. Information needs to be readily available and easily understood on assistance that exists which could help small companies introduce technological innovations into this market area.

4. EPA should review and test promising new methods of treatment in a timely manner.

FINANCIAL ASSISTANCE

1. Restore the recycling investment tax credit for the purchase of new and used equipment related to the recycling, transportation and beneficial reuse of hazardous wastes.

2. Re-establish the Pollution Control Bond Authorities on a tax-exempt basis as before. Since the loss of the tax-exempt status by rule in 1982, Pollution Control Bond use has dropped precipitously.

3. At the present time, the Small Business Innovative Research Act (SBIR) forces the EPA to set aside a portion (1984 - .6%) of their R & D money for small businesses. More should be targetted for innovation in the waste treatment and/or reduction areas of technology.

4. Set-aside money in the R & D budget to test promising new technologies. Currently, if a small business cannot afford the cost of tests required by the EPA the new technology must lay idle. Suggestion: Set-aside a percentage of the SBIR funds for testing promising new technologies developed by small businesses.